WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTER PATENTOF THE UNITED STATES IS:

1. An image forming apparatus, comprising:

a light beam generating and modulating device configured to generate and modulate a light beam in accordance with an image signal;

a light beam deflecting device configured to deflect the light beam modulated by the light beam generating and modulating device and to scan an image carrier so as to form an image;

a pair of light beam detecting device configured to detect the light beam deflected by the deflecting device at two separate positions on a main scanning line, said pair of light beam detecting device generating both of a reference time difference and at a prescribed temperature and a time difference to be compared with the reference time difference in a prescribed timing during image formation;

a time difference measuring device configured to measure a time difference between time periods when the light beam is detected by one of the light beam detecting devices and when that is detected by the other of light beam detecting devices;

an image magnification correcting device configured to change a write clock frequency of the light beam and the rotation number of the light deflecting device in accordance with the

time difference detected by the time difference measuring device so as to correct magnification error in the main scanning direction of the image on the image carrier, said write clock frequency controlling image data writing density of the light beam; and

a visualizing device configured to visualize the image on the image carrier written by the light beam.

2. An image forming apparatus, comprising:

a plurality of light beam generating and modulating devices each configured to generate and modulate a light beam in accordance with a different mono color image signal;

at least one light beam deflecting device configured to deflect a plurality of light beams modulated by the plurality of light beam generating and modulating devices and to scan an image carrier so as to form a prescribed superimposed image, one of said plurality of light beams being scanned in a direction opposite to that of the other light beam;

a pair of light beam detecting device configured to detect one of the light beams deflected by the at least one light beam deflecting device at two separate positions on a main scanning line, said pair of light beam detecting device generating both of a reference time difference and at a prescribed temperature and a time difference to be compared

with the reference time difference in a prescribed timing during image formation;

a time difference measuring device configured to measure a time difference between time periods when one of the plurality of light beams is detected by one of the light beam detecting devices and when that is detected by the other of light beam detecting devices;

an image magnification correcting device configured to change a plurality of write clock frequencies of the plurality of laser beams, respectively, and the rotation number of the at least one light beam deflecting device in accordance with the time difference detected by the time difference measuring device so as to correct magnification error in the main scanning direction of the superimposed image on the image carrier, said write clock frequency controlling image data writing density of the light beam; and

a visualizing device configured to visualize the superimposed image on the image carrier written by the plurality of light beams.

3. An image forming apparatus according to claim 1, wherein said image magnification correcting device changes the rotation number of the light beam deflecting device if magnification error is not completely corrected by changing

the write clock frequency.

4. An image forming apparatus according to claim 1, wherein said image magnification correcting device changes the write clock frequency and the rotation number based on a newly measured time difference after initializing the last rotation number of the light beam deflecting device.

5. An image forming apparatus according to claim 1, further comprising an image write start position adjusting device configure to adjust an image write start position in the main scanning direction on the image carrier in accordance with the time difference detected by the time difference measuring device.

6. An image forming apparatus, comprising:

a light beam generating and modulating device configured to generate and modulate a light beam in accordance with an image signal;

a light beam deflecting device configured to deflect the light beam modulated by the light beam generating and modulating device and to scan an image carrier so as to form an image;

an optical unit configured to include an $f\theta$ lens

configured to convert the light beam from substantially the uniform angular speed scanning light to substantially the uniform speed scanning light;

a temperature detecting device configured to detect temperature of the optical unit;

an image magnification correcting device configured to change a write clock frequency of the light beam and the rotation number of the light deflecting device in accordance with the temperature detected by the temperature detecting device so as to correct magnification error in the main scanning direction of the image on the image carrier, said write clock frequency controlling image data writing density of the light beam; and

a visualizing device configured to visualize the image on the image carrier written by the light beam.

7. An image forming apparatus, comprising:

a plurality of light beam generating and modulating devices each configured to generate and modulate a light beam in accordance with a different mono color image signal;

at least one light beam deflecting device configured to deflect a plurality of light beams generated and modulated by the plurality of light beam generating and modulating devices and to scan an image carrier so as to form a prescribed superimposed image, one of said plurality of light beams being

scanned in a direction opposite to that of the other light beam;

an optical unit configured to include an fθ lens configured to convert the light beam from substantially the uniform angular speed scanning light to substantially the uniform speed scanning light;

a temperature detecting device configured to detect temperature of the optical unit;

an image magnification correcting device configured to change a plurality of write clock frequencies of the plurality of laser beams and the rotation number of the at least one light beam deflecting device in accordance with the temperature of the optical unit so as to correct magnification error in the main scanning direction of the images on the image carrier, said write clock frequency controlling image data writing density by the light beam; and

a visualizing device configured to visualize the superimposed image on the image carrier written by the plurality of light beams.

8. An image forming apparatus according to claim 6, wherein said temperature is of the fθ lens.

9. An image forming apparatus according to claim 1, wherein said time difference measuring device measures the time

difference after lowering a light beam deflection speed of the light beam deflecting device so as to precisely obtain a reference time difference by counting prescribed pulses.

10. An image forming apparatus according to claim 2, wherein said time difference measuring device measures the time difference after lowering a light beam deflection speed of the light beam deflecting device so as to precisely obtain a reference time difference by counting prescribed pulses.

11. An image forming apparatus according to claims 1 and 2, wherein said light beam deflecting device includes a polygon mirror.

12. An image forming apparatus according to claim 9, wherein said light beam deflection speed is only lowered when the time difference is detected, and returned to a level used for image formation.

13. An image forming apparatus according to claim 9, wherein said light beam deflection speed is low when starting light beam deflection so as to precisely obtain a reference time difference.

14. An image forming apparatus according to claim 9, wherein said time difference is measured without lowering the light beam deflection speed when continuous printing is executed and time difference is detected so as to only detect needs of image magnification correction, and said magnification correction is executed based on a time difference detected after lowering the light beam deflection speed in a prescribed timing corresponding to an interval of sheets.

ABSTRACT

An image forming apparatus includes a light beam generating and modulating device which generates and modulates a light beam in accordance with an image signal, a light beam deflecting device which deflects the modulated light beam and scans an image carrier so as to form an image.

a pair of light beam detecting device is provided to detect the light beam deflected by the deflecting device at two separate positions on a main scanning line. The pair of light beam detecting device generates both of a reference time difference and at a prescribed temperature and a time difference to be compared with the reference time difference in a prescribed timing during image formation. A time difference measuring device is provided to measure a time difference between time periods when the light beam is detected by one of the light beam detecting devices and when that is detected by the other of light beam detecting devices. An image magnification correcting device is also provided to change a write clock frequency of the light beam and the rotation number of the light deflecting device in accordance with the time difference so as to correct magnification error in the main scanning direction of the image on the image carrier. A visualizing device is provided to visualize the image on the image carrier written by the light beam.

FIG. 1

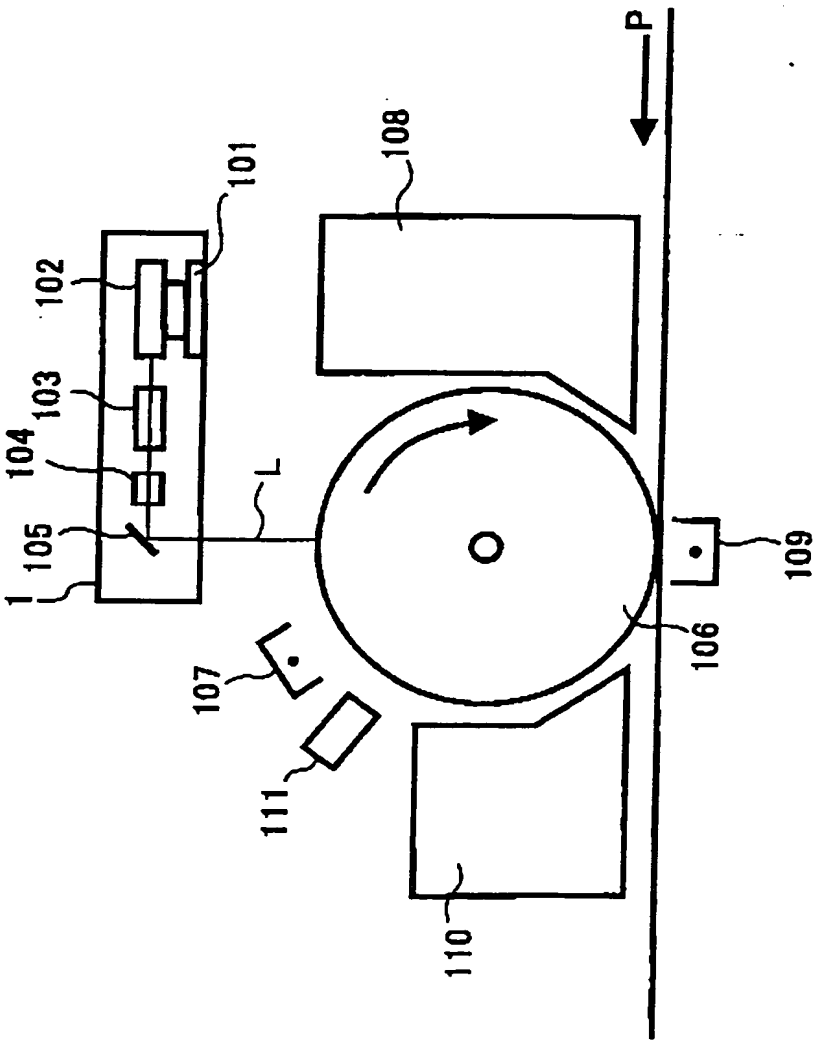


FIG. 2

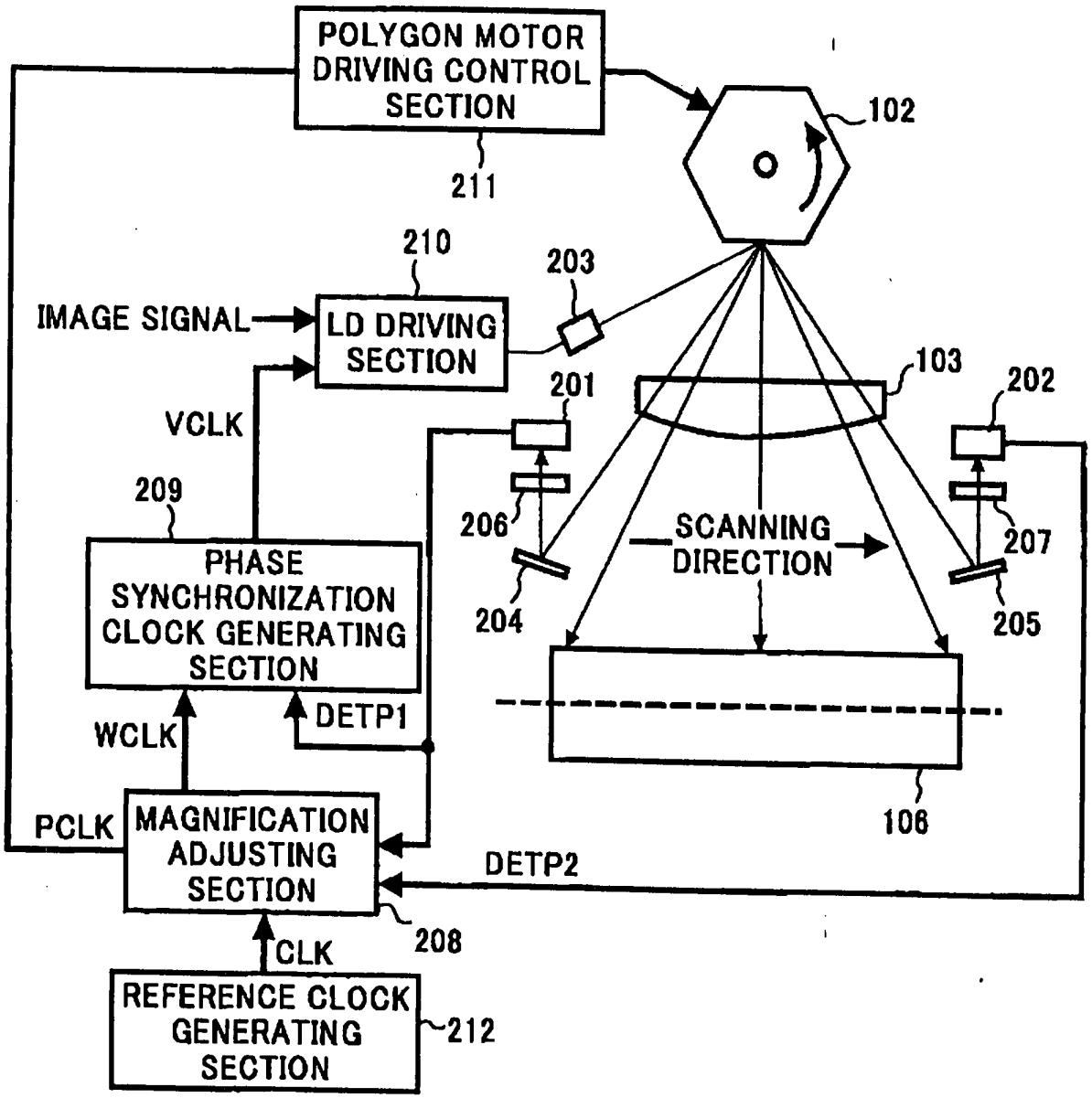

POLYGON MOTOR DRIVING CONTROL SECTION
211
102
210
203
IMAGE SIGNAL
LD DRIVING SECTION
103
201
202
VCLK
209
206
SCANNING DIRECTION
207
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION
204
205
DETP1
WCLK
PCLK
MAGNIFICATION ADJUSTING SECTION
106
DETP2
208
CLK
REFERENCE CLOCK GENERATING SECTION
212

FIG. 3

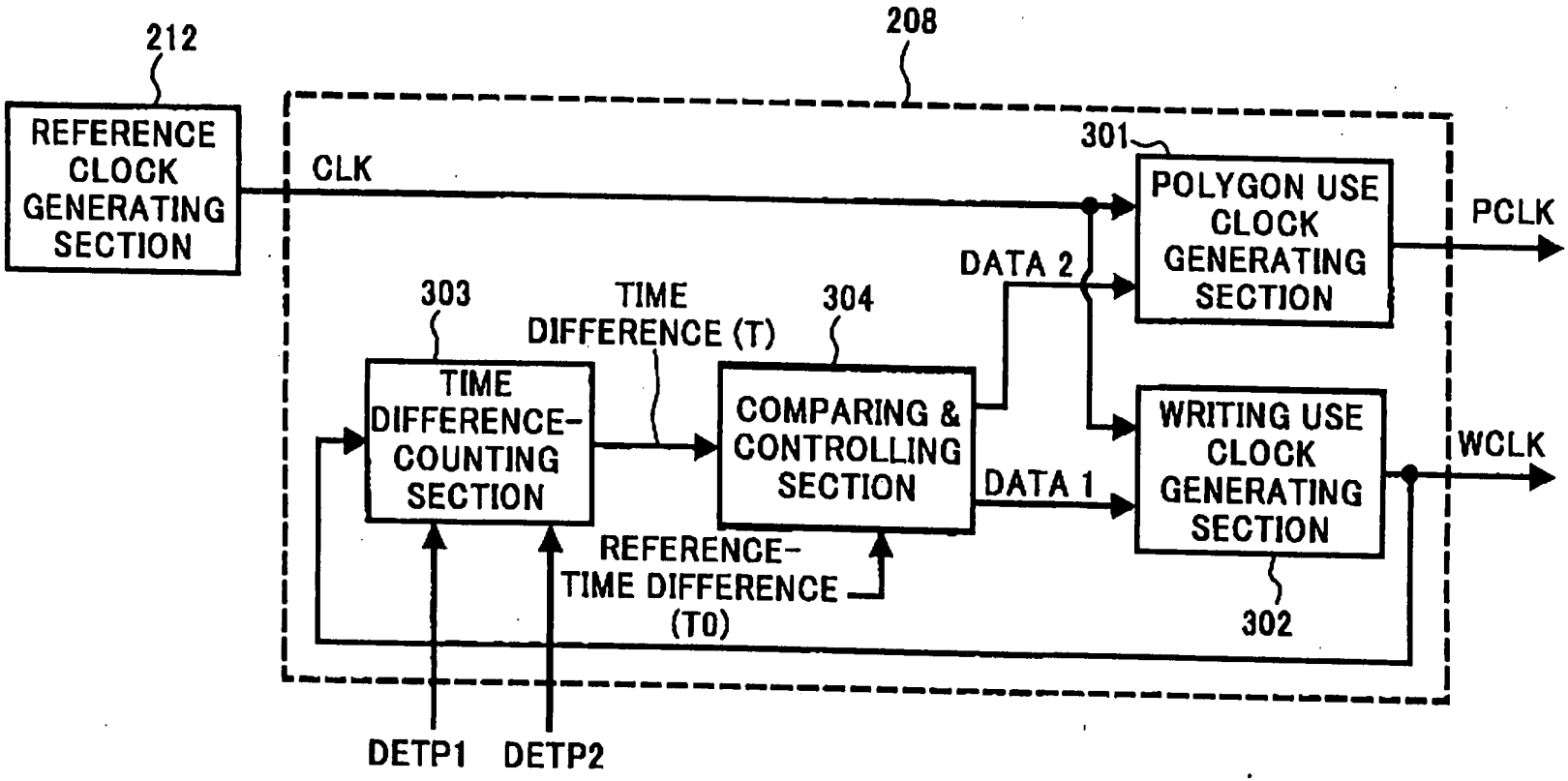

212
208
REFERENCE CLOCK GENERATING SECTION
CLK
301
POLYGON USE CLOCK GENERATING SECTION
PCLK
DATA 2
303
TIME DIFFERENCE (T)
304
TIME DIFFERENCE-COUNTING SECTION
COMPARING & CONTROLLING SECTION
WRITING USE CLOCK GENERATING SECTION
WCLK
DATA 1
REFERENCE-TIME DIFFERENCE (T0)
302
DETP1
DETP2

FIG. 4

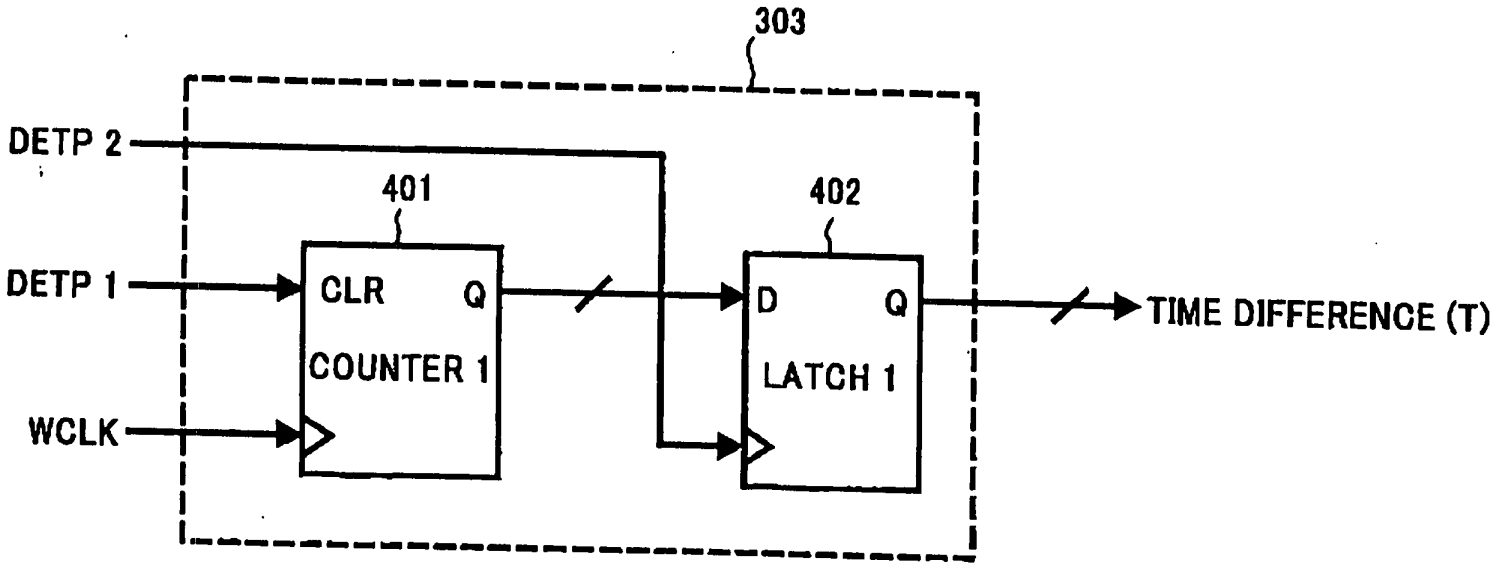

303
DETP 2
401
402
DETP 1
CLR
Q
D
Q
COUNTER 1
LATCH 1
WCLK
TIME DIFFERENCE (T)

FIG. 5

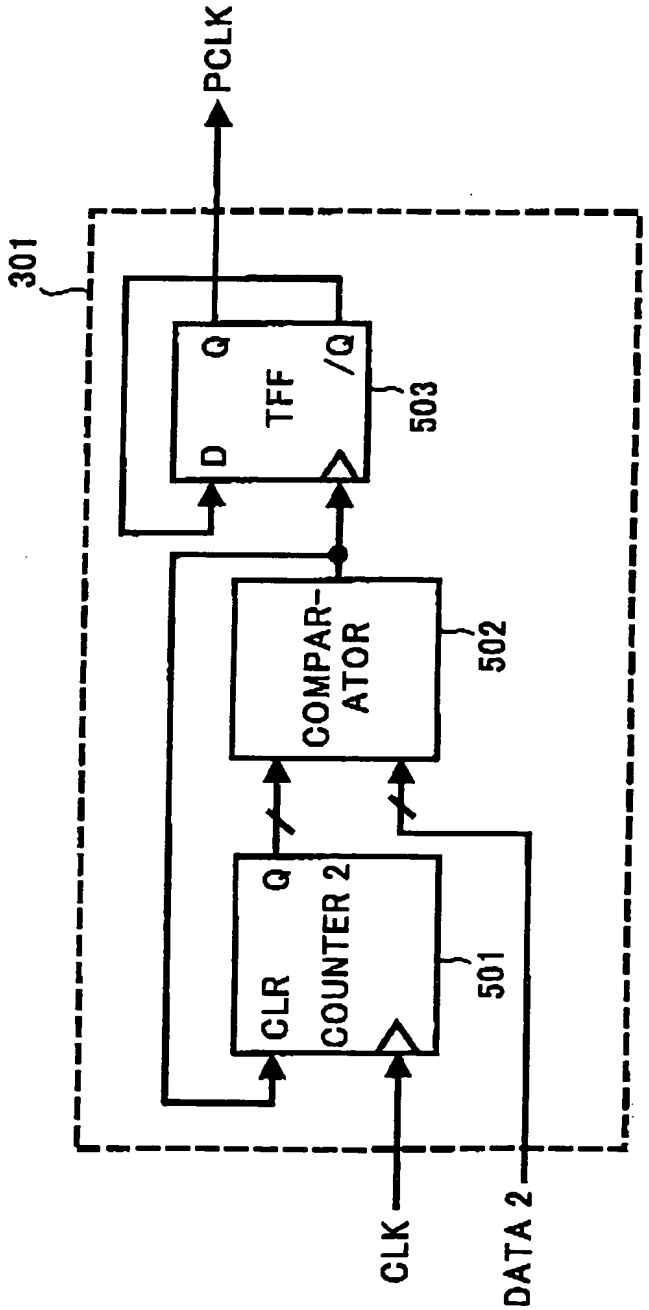

PCLK
301
Q
/Q
TFF
D
503
COMPAR-
ATOR
502
Q
CLR
COUNTER 2
501
CLK
DATA 2

FIG. 6

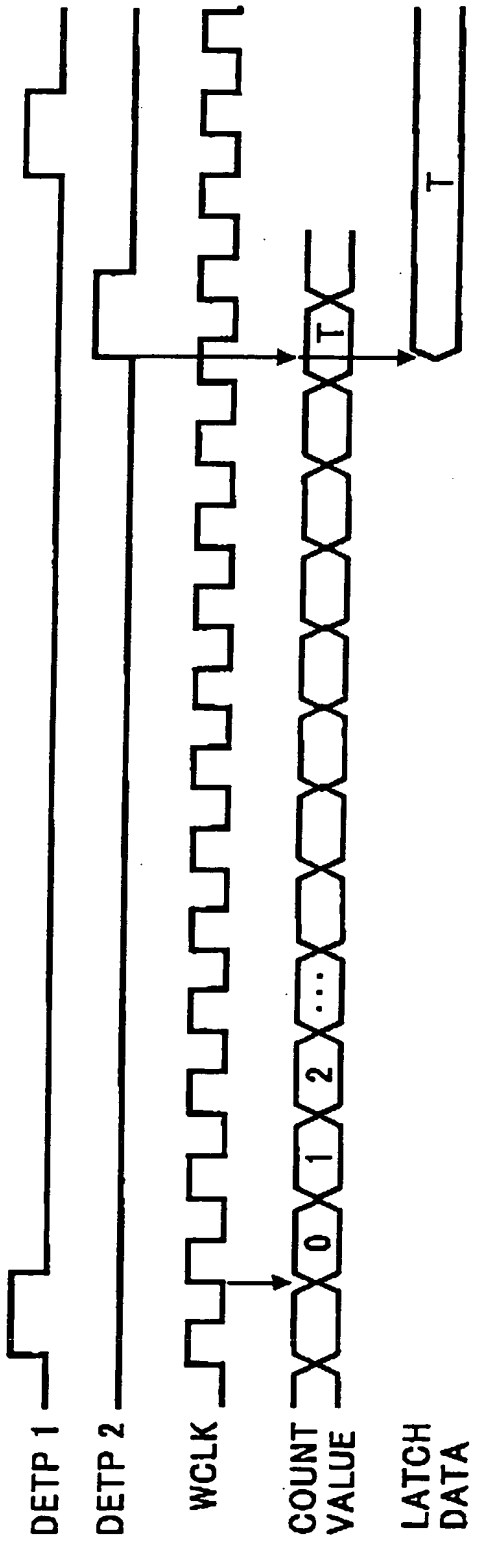


FIG. 7

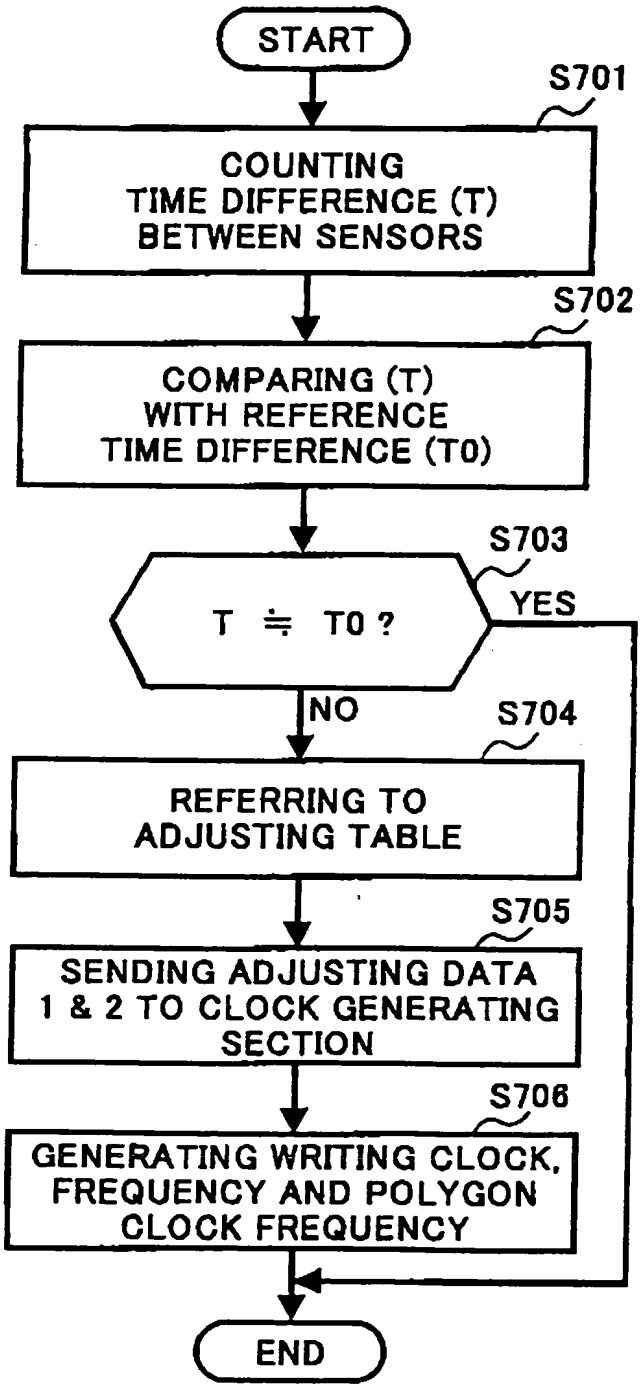

START
S701
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S702
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T0)
S703
T ≒ T0 ?
YES
NO
S704
REFERRING TO ADJUSTING TABLE
S705
SENDING ADJUSTING DATA 1 & 2 TO CLOCK GENERATING SECTION
S706
GENERATING WRITING CLOCK, FREQUENCY AND POLYGON CLOCK FREQUENCY
END

FIG. 8

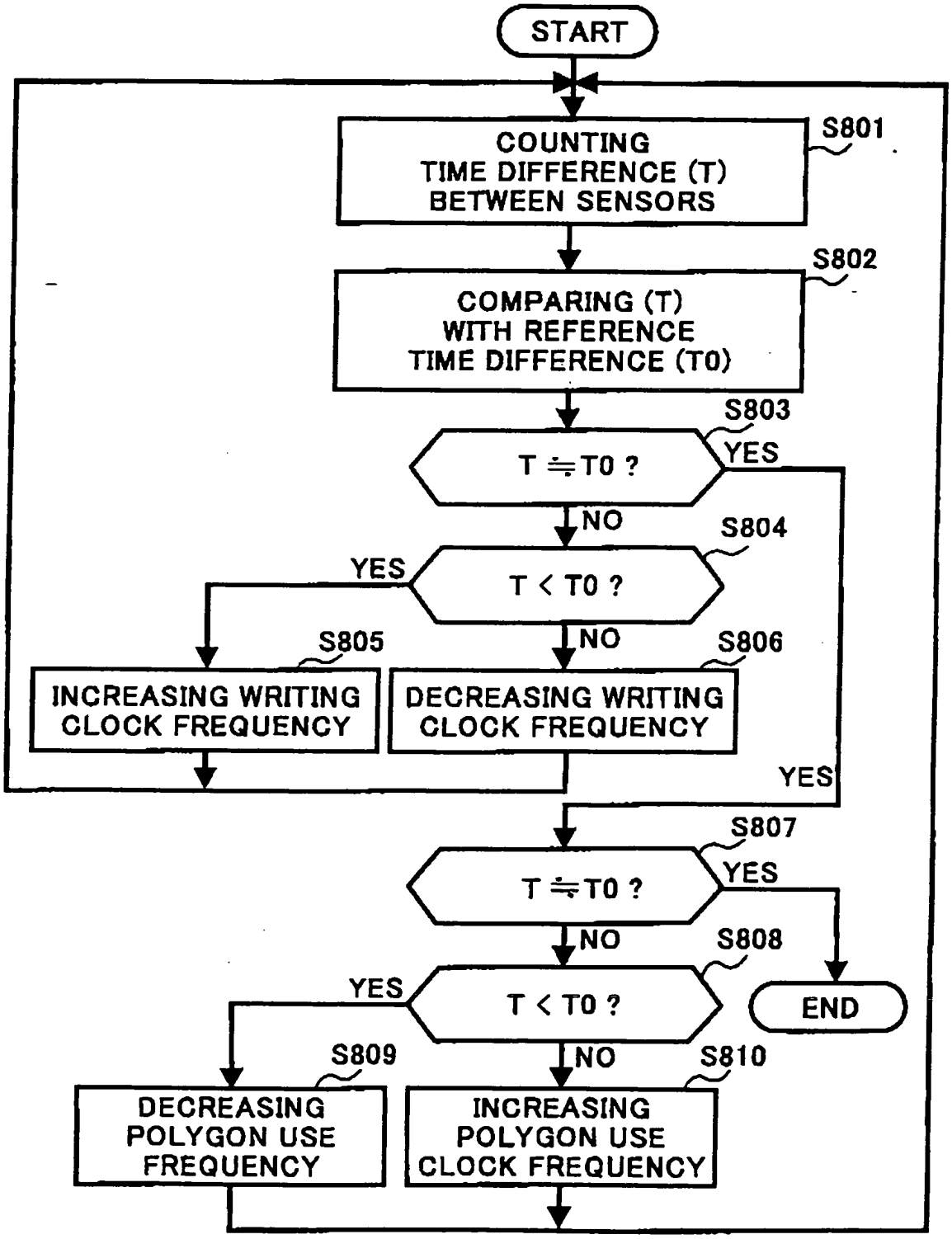

START
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S801
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T0)
S802
S803
T ≒ T0 ?
YES
NO
S804
YES
T < T0 ?
NO
S805
S806
INCREASING WRITING CLOCK FREQUENCY
DECREASING WRITING CLOCK FREQUENCY
YES
S807
T ≒ T0 ?
YES
NO
S808
YES
T < T0 ?
END
NO
S809
S810
DECREASING POLYGON USE FREQUENCY
INCREASING POLYGON USE CLOCK FREQUENCY

FIG. 9

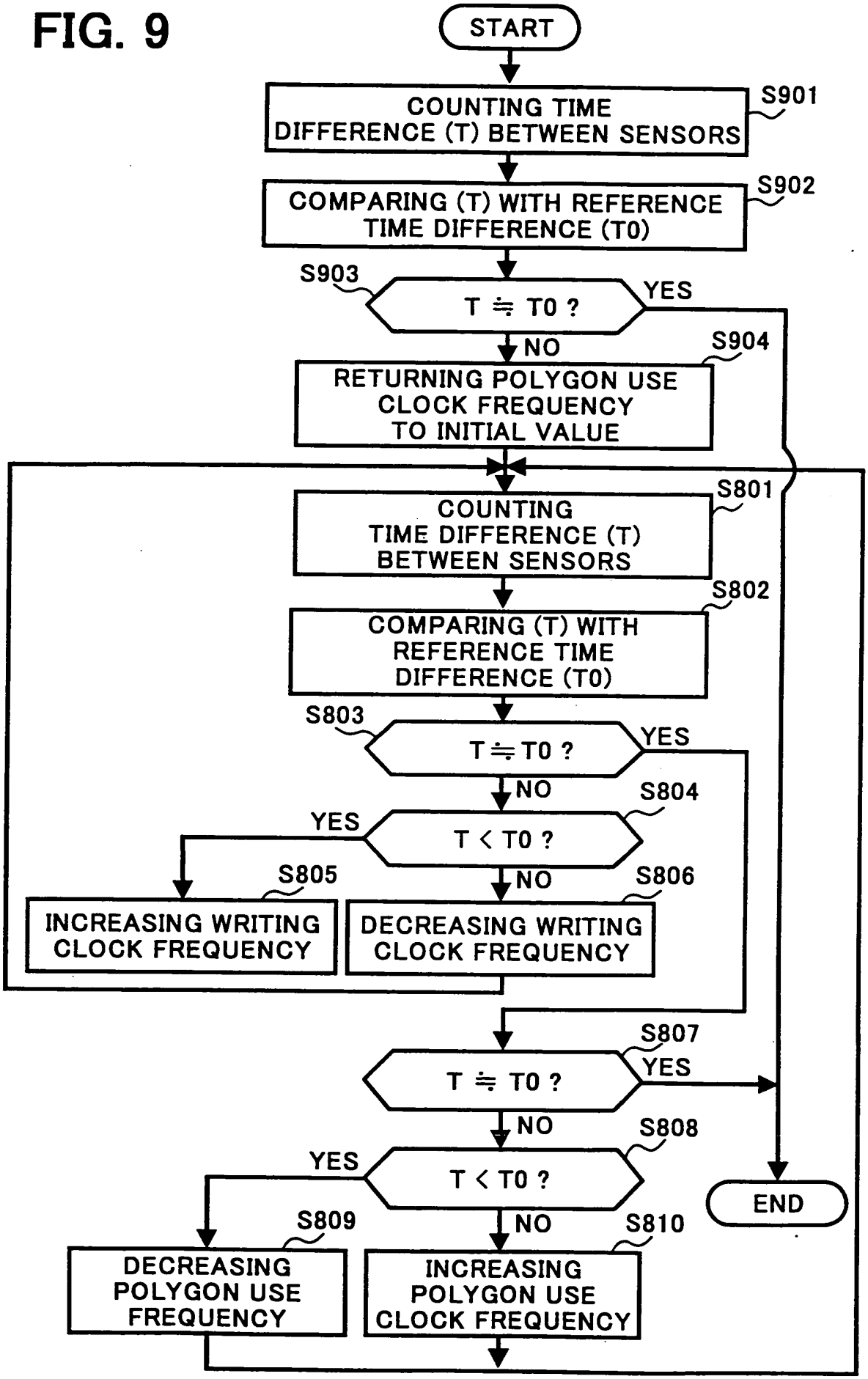

START
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S901
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T0)
S902
S903
T ≒ T0 ?
YES
NO
S904
RETURNING POLYGON USE CLOCK FREQUENCY TO INITIAL VALUE
S801
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S802
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T0)
S803
T ≒ T0 ?
YES
NO
S804
YES
T < T0 ?
NO
S805
S806
INCREASING WRITING CLOCK FREQUENCY
DECREASING WRITING CLOCK FREQUENCY
S807
T ≒ T0 ?
YES
NO
S808
YES
T < T0 ?
NO
END
S809
S810
DECREASING POLYGON USE FREQUENCY
INCREASING POLYGON USE CLOCK FREQUENCY

FIG. 10

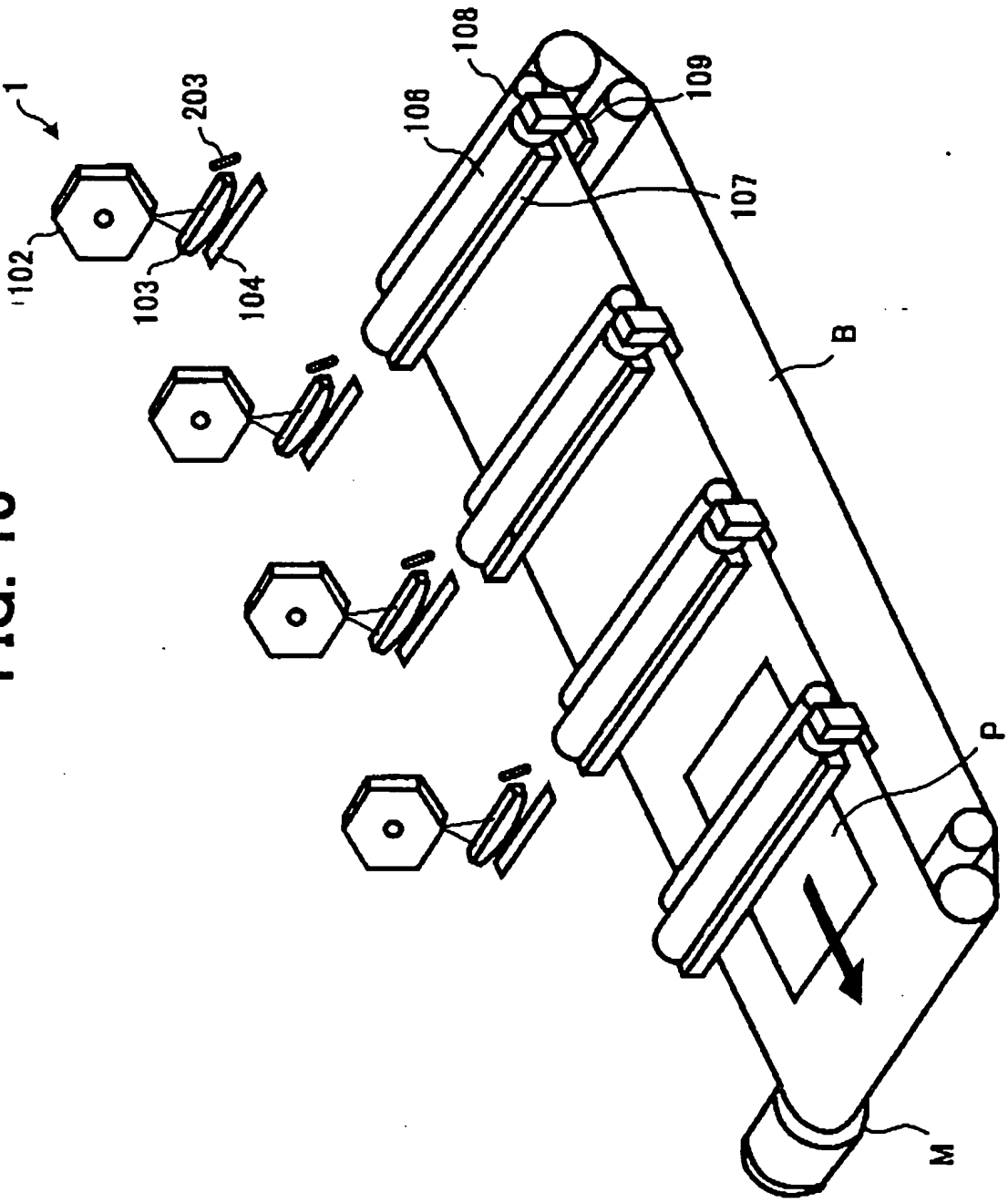


FIG. 11

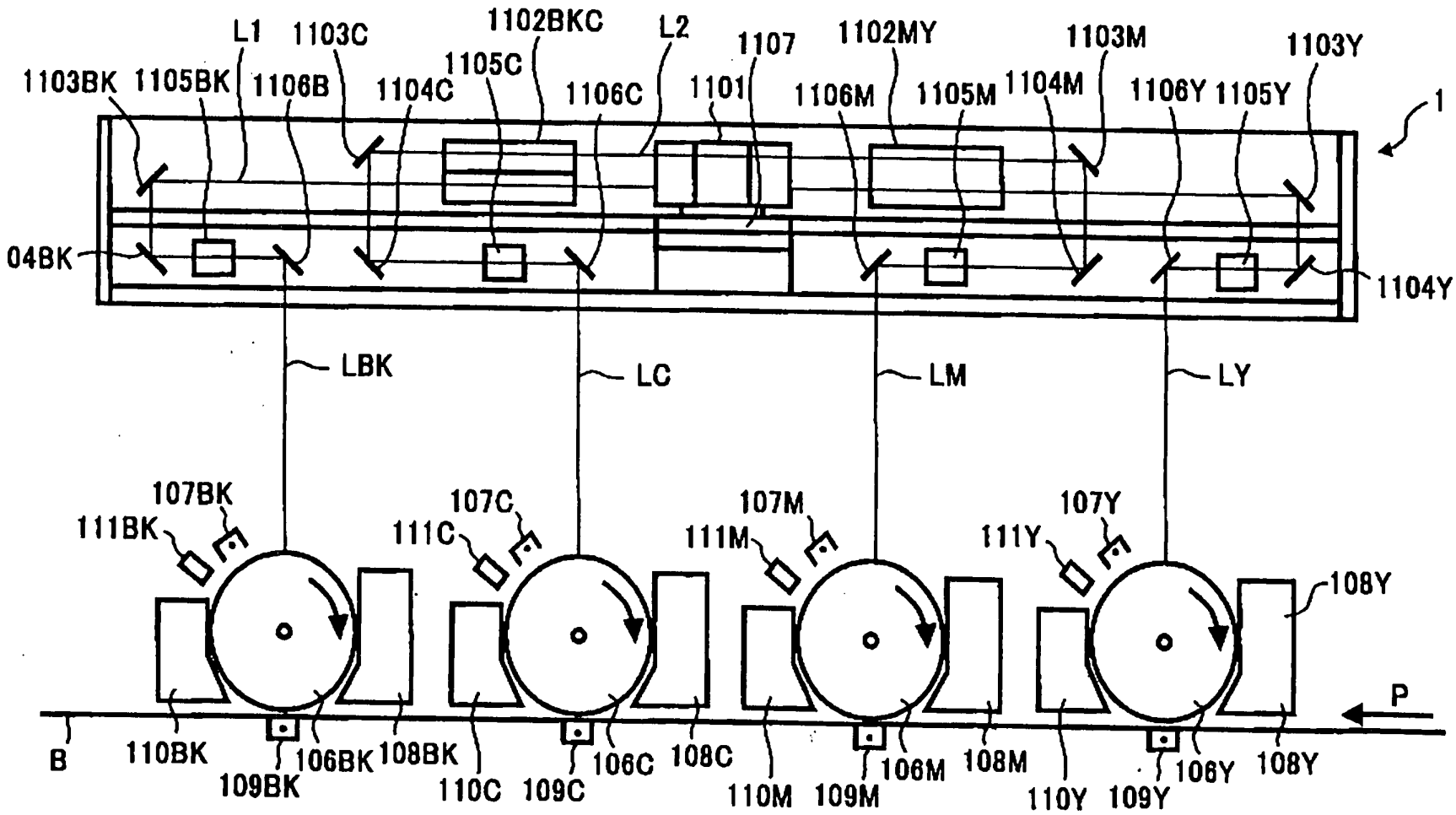

L1
1103C
1102BKC
L2
1107
1102MY
1103M
1103Y
1103BK
1105BK
1106B
1104C
1105C
1106C
1101
1106M
1105M
1104M
1106Y
1105Y
1
04BK
1104Y
LBK
LC
LM
LY
107BK
111BK
107C
111C
107M
111M
107Y
111Y
108Y
P
B
110BK
109BK
106BK
108BK
110C
109C
106C
108C
110M
109M
106M
108M
110Y
109Y
106Y
108Y

FIG. 12

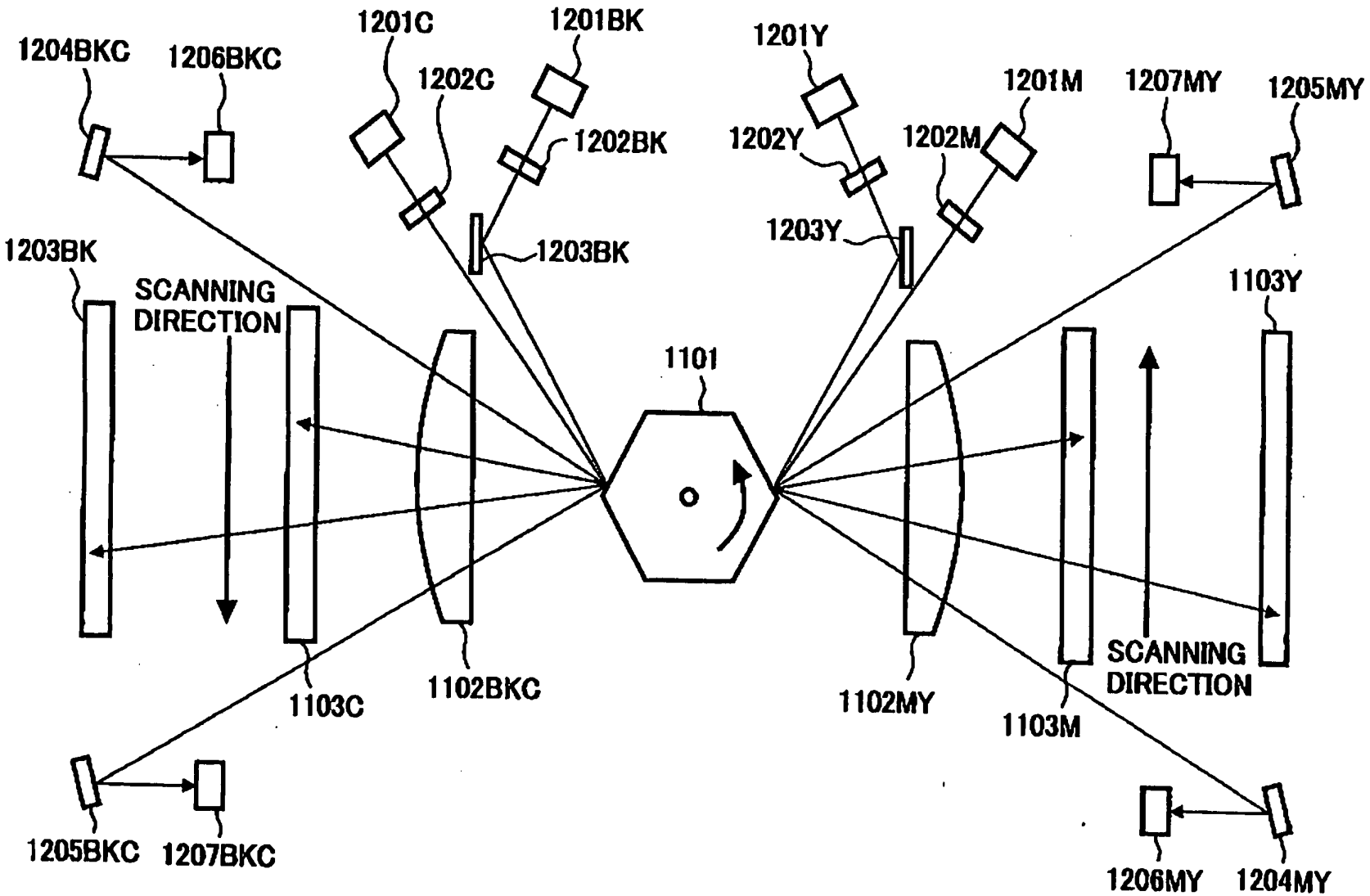

1204BKC
1206BKC
1201C
1201BK
1202C
1202BK
1203BK
1203BK
1201Y
1201M
1207MY
1205MY
1202Y
1202M
1203Y
1103Y
SCANNING DIRECTION
1101
1103C
1102BKC
1102MY
1103M
SCANNING DIRECTION
1205BKC
1207BKC
1206MY
1204MY

FIG. 13

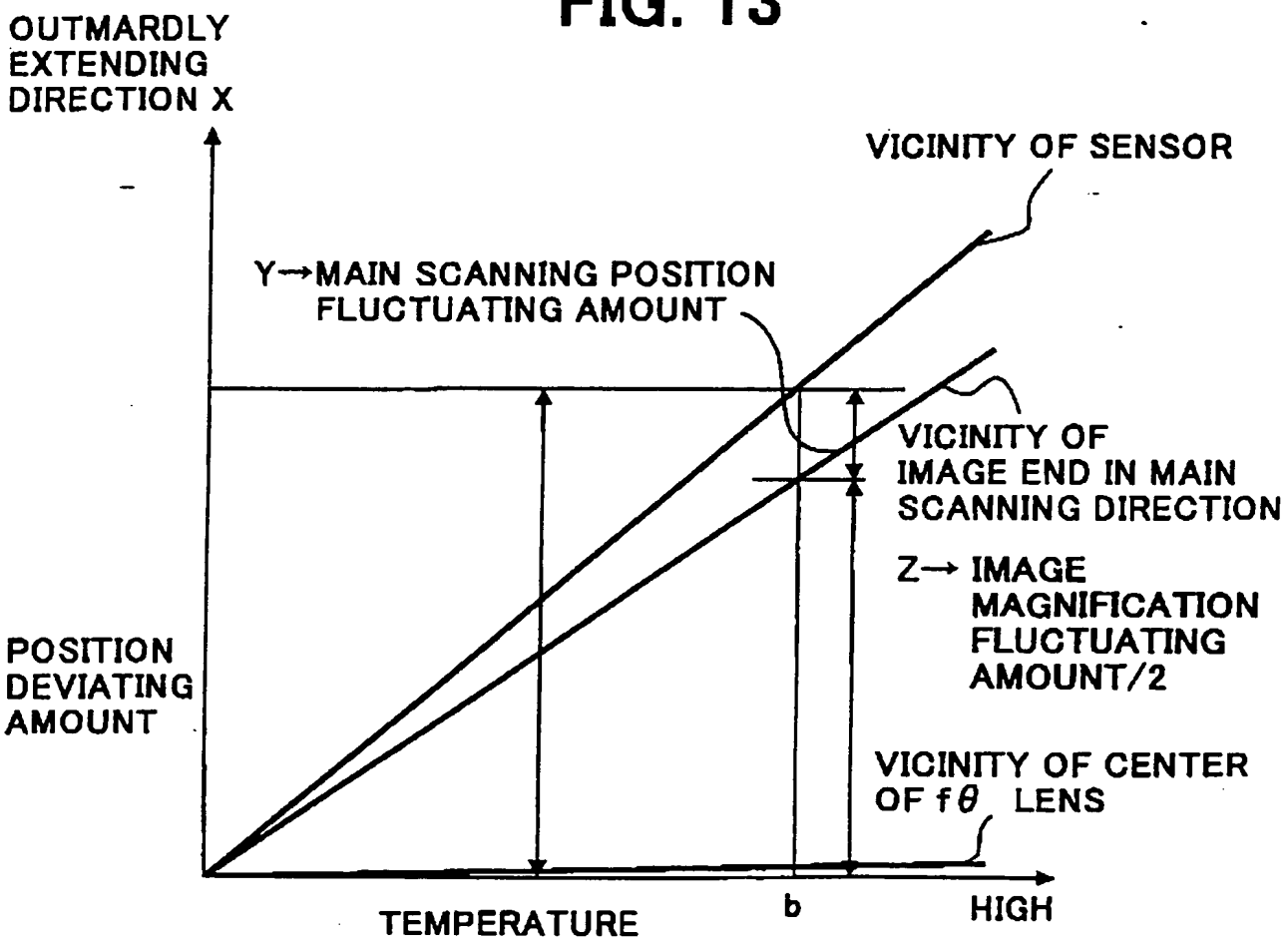

OUTMARDLY EXTENDING DIRECTION X
VICINITY OF SENSOR
Y→MAIN SCANNING POSITION FLUCTUATING AMOUNT
VICINITY OF IMAGE END IN MAIN SCANNING DIRECTION
Z→ IMAGE MAGNIFICATION FLUCTUATING AMOUNT/2
POSITION DEVIATING AMOUNT
VICINITY OF CENTER OF fθ LENS
TEMPERATURE
b
HIGH

FIG. 14

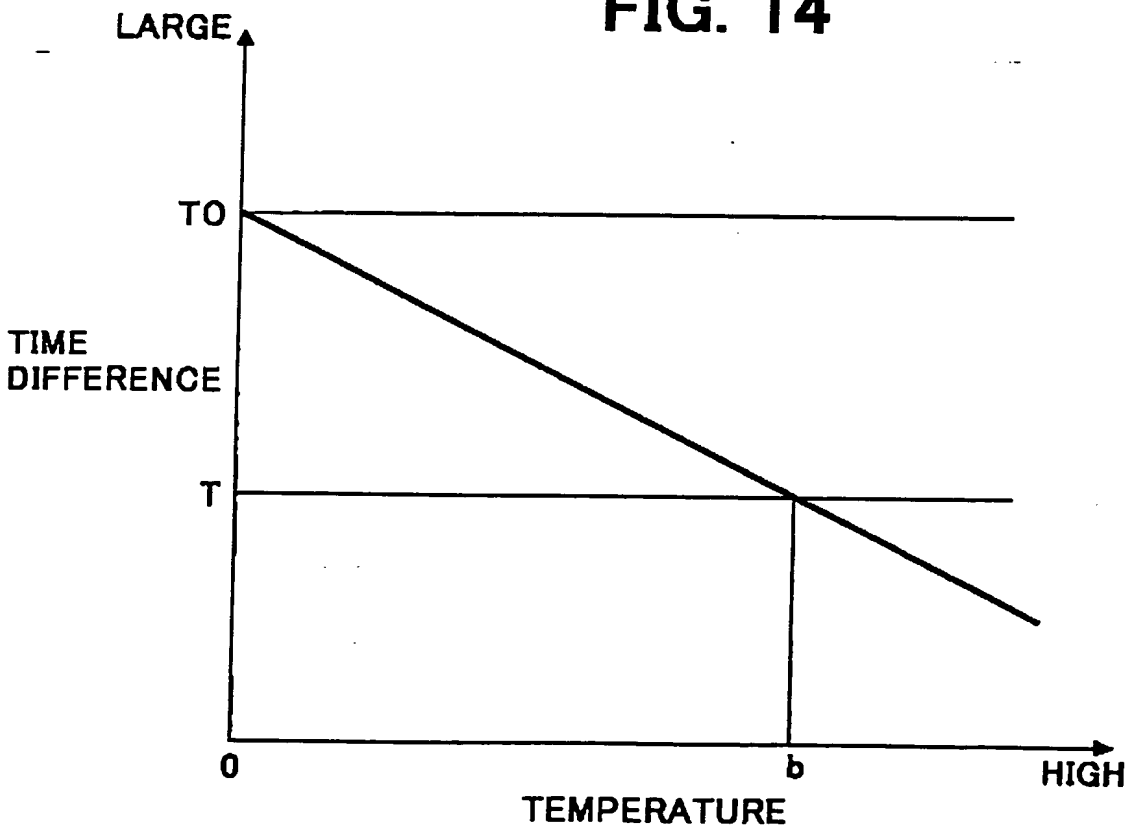


FIG. 15

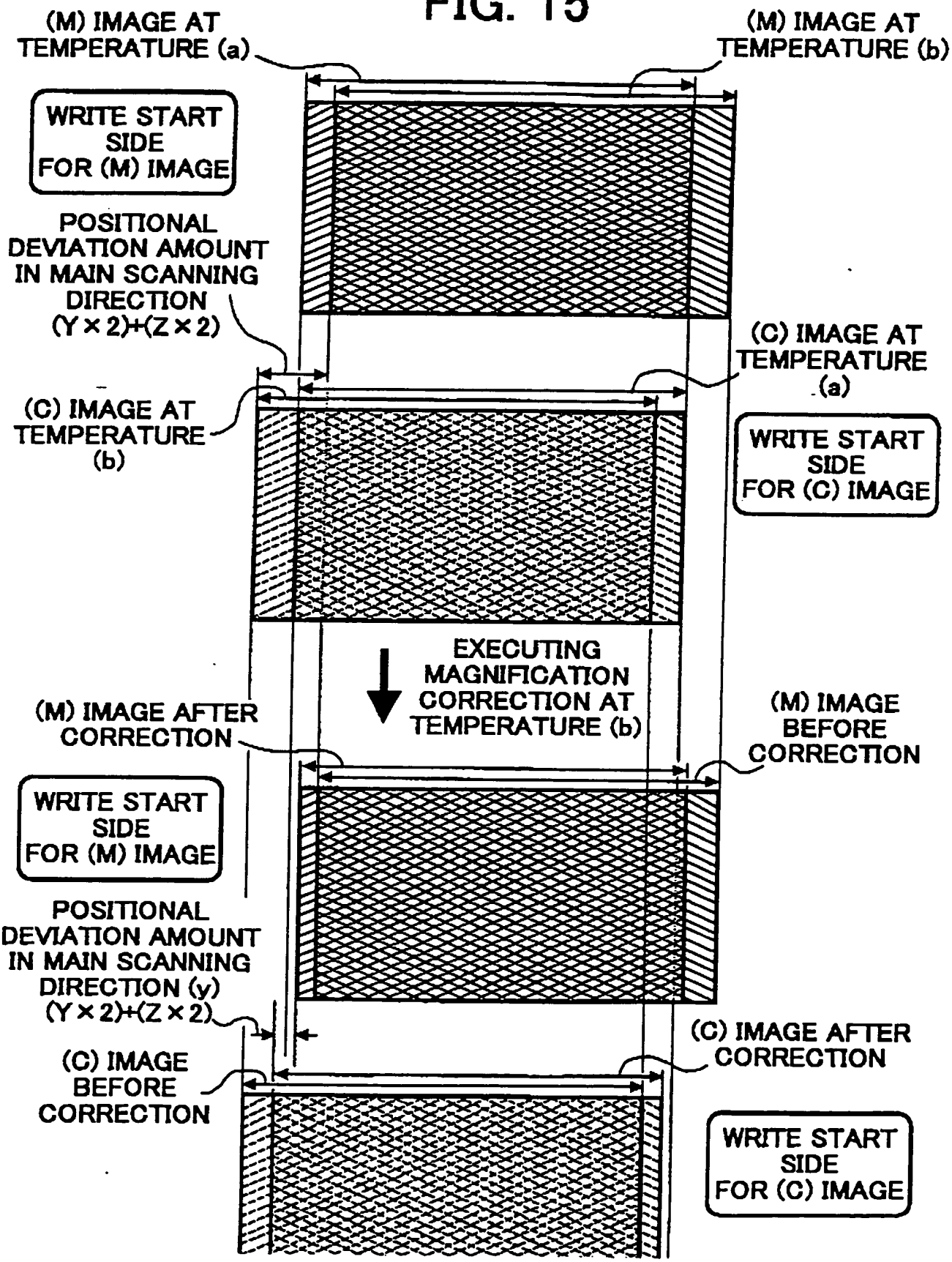

(M) IMAGE AT TEMPERATURE (a)
(M) IMAGE AT TEMPERATURE (b)
WRITE START SIDE FOR (M) IMAGE
POSITIONAL DEVIATION AMOUNT IN MAIN SCANNING DIRECTION (Y×2)+(Z×2)
(C) IMAGE AT TEMPERATURE (a)
(C) IMAGE AT TEMPERATURE (b)
WRITE START SIDE FOR (C) IMAGE
EXECUTING MAGNIFICATION CORRECTION AT TEMPERATURE (b)
(M) IMAGE AFTER CORRECTION
(M) IMAGE BEFORE CORRECTION
WRITE START SIDE FOR (M) IMAGE
POSITIONAL DEVIATION AMOUNT IN MAIN SCANNING DIRECTION (y) (Y×2)+(Z×2)
(C) IMAGE AFTER CORRECTION
(C) IMAGE BEFORE CORRECTION
WRITE START SIDE FOR (C) IMAGE

FIG. 16

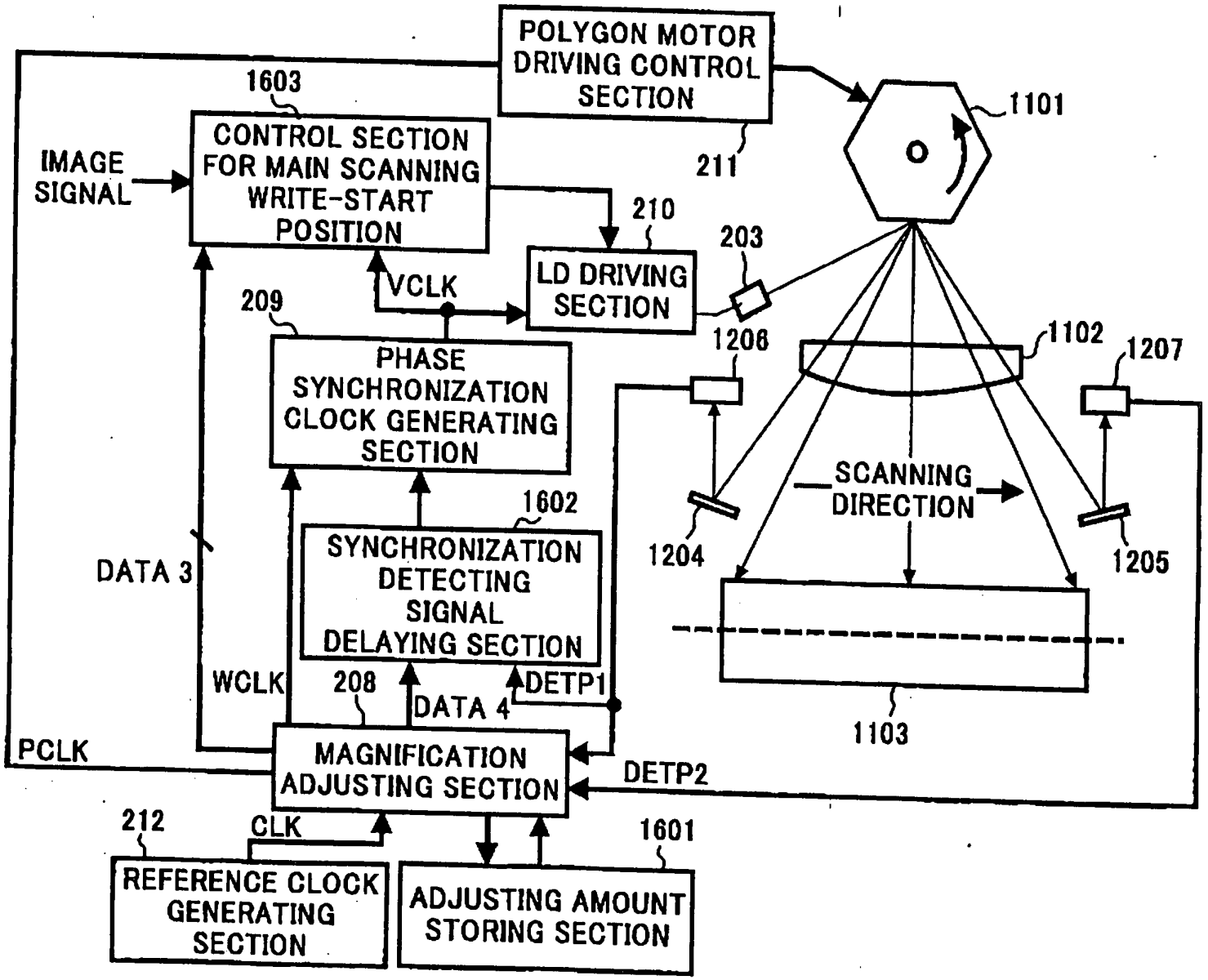

POLYGON MOTOR DRIVING CONTROL SECTION
1603
CONTROL SECTION FOR MAIN SCANNING WRITE-START POSITION
IMAGE SIGNAL
211
1101
210
203
LD DRIVING SECTION
VCLK
209
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION
1206
1102
1207
SCANNING DIRECTION
1602
SYNCHRONIZATION DETECTING SIGNAL DELAYING SECTION
DATA 3
1204
1205
WCLK
208
DETP1
DATA 4
1103
PCLK
MAGNIFICATION ADJUSTING SECTION
DETP2
212
CLK
1601
REFERENCE CLOCK GENERATING SECTION
ADJUSTING AMOUNT STORING SECTION

FIG. 17

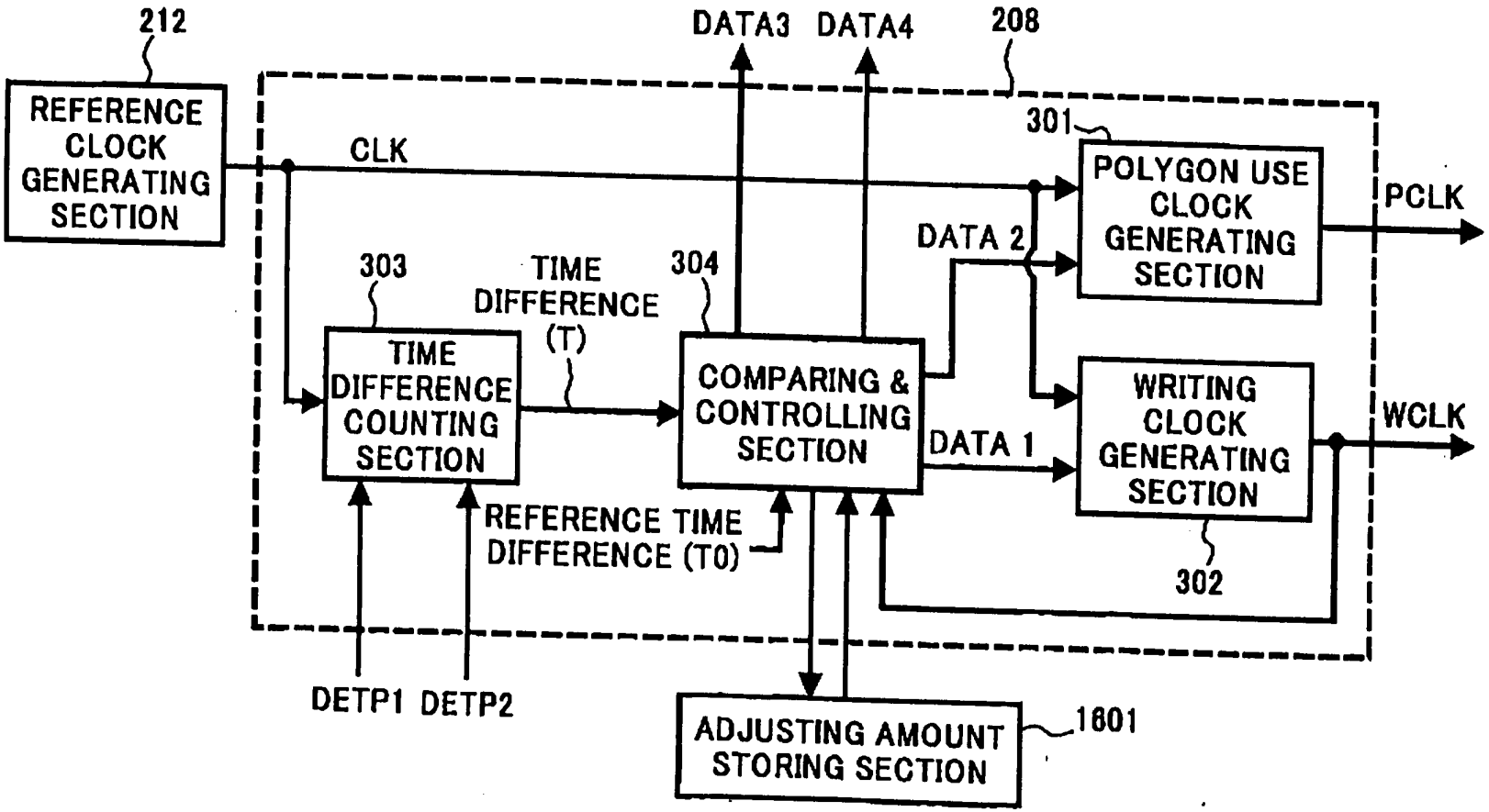

212
REFERENCE CLOCK GENERATING SECTION
CLK
DATA3
DATA4
208
301
POLYGON USE CLOCK GENERATING SECTION
PCLK
DATA 2
303
TIME DIFFERENCE COUNTING SECTION
TIME DIFFERENCE (T)
304
COMPARING & CONTROLLING SECTION
DATA 1
WRITING CLOCK GENERATING SECTION
WCLK
REFERENCE TIME DIFFERENCE (T0)
302
DETP1
DETP2
ADJUSTING AMOUNT STORING SECTION
1601

FIG. 18

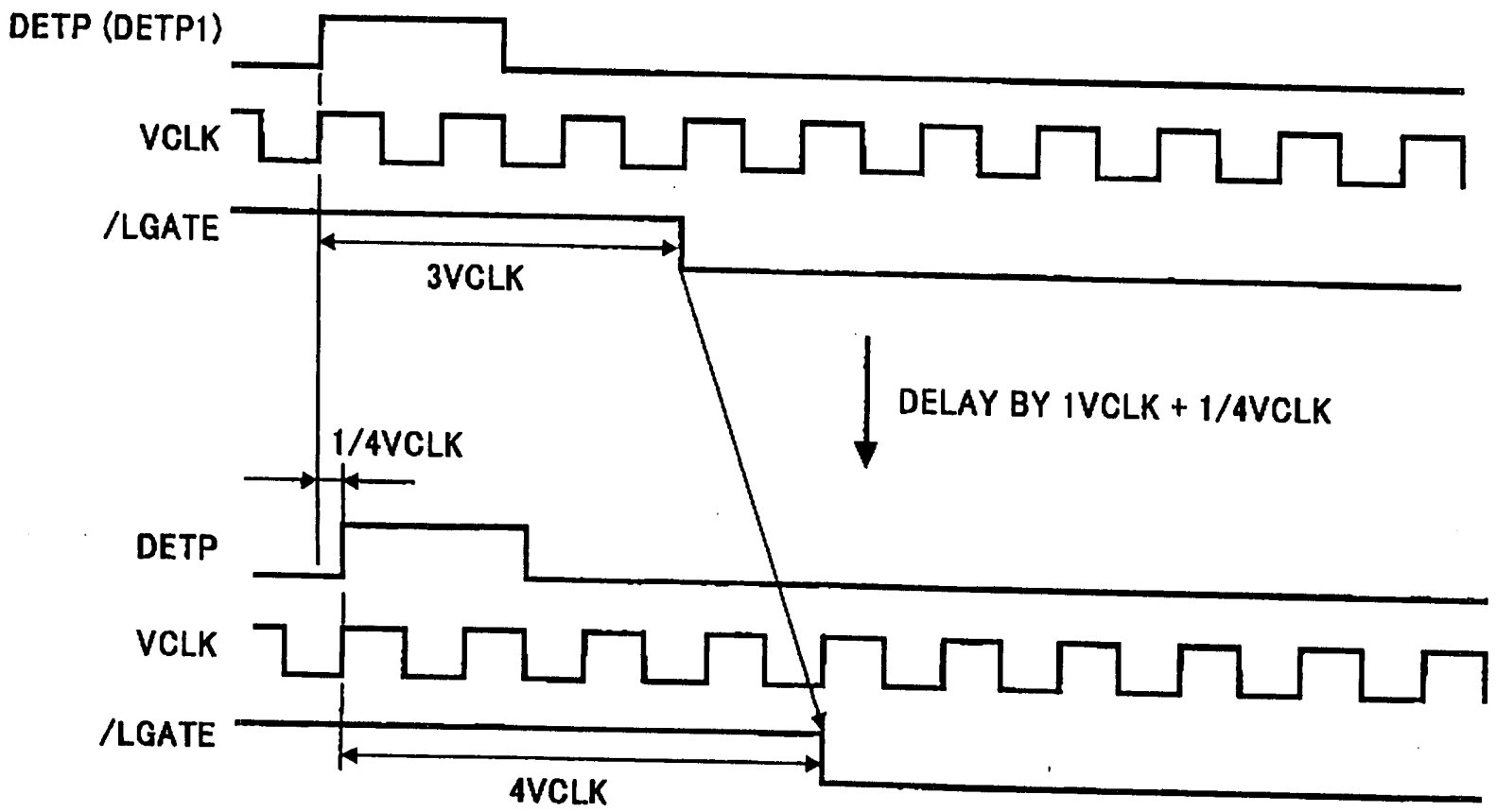

DETP (DETP1)
VCLK
/LGATE
3VCLK
DELAY BY 1VCLK + 1/4VCLK
1/4VCLK
DETP
VCLK
/LGATE
4VCLK

FIG. 19

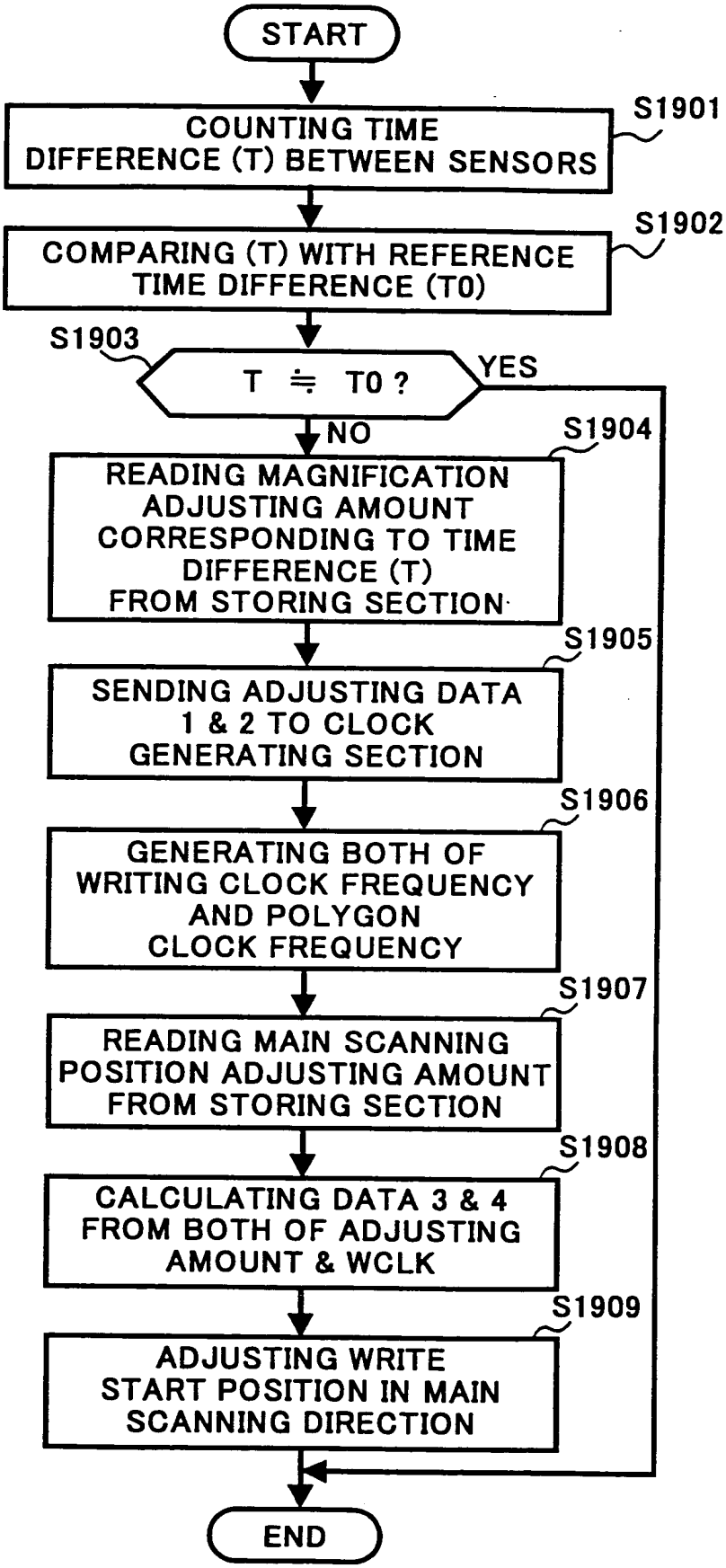

START
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S1901
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T0)
S1902
S1903
T ≒ T0 ?
YES
NO
S1904
READING MAGNIFICATION ADJUSTING AMOUNT CORRESPONDING TO TIME DIFFERENCE (T) FROM STORING SECTION
S1905
SENDING ADJUSTING DATA 1 & 2 TO CLOCK GENERATING SECTION
S1906
GENERATING BOTH OF WRITING CLOCK FREQUENCY AND POLYGON CLOCK FREQUENCY
S1907
READING MAIN SCANNING POSITION ADJUSTING AMOUNT FROM STORING SECTION
S1908
CALCULATING DATA 3 & 4 FROM BOTH OF ADJUSTING AMOUNT & WCLK
S1909
ADJUSTING WRITE START POSITION IN MAIN SCANNING DIRECTION
END

FIG. 20

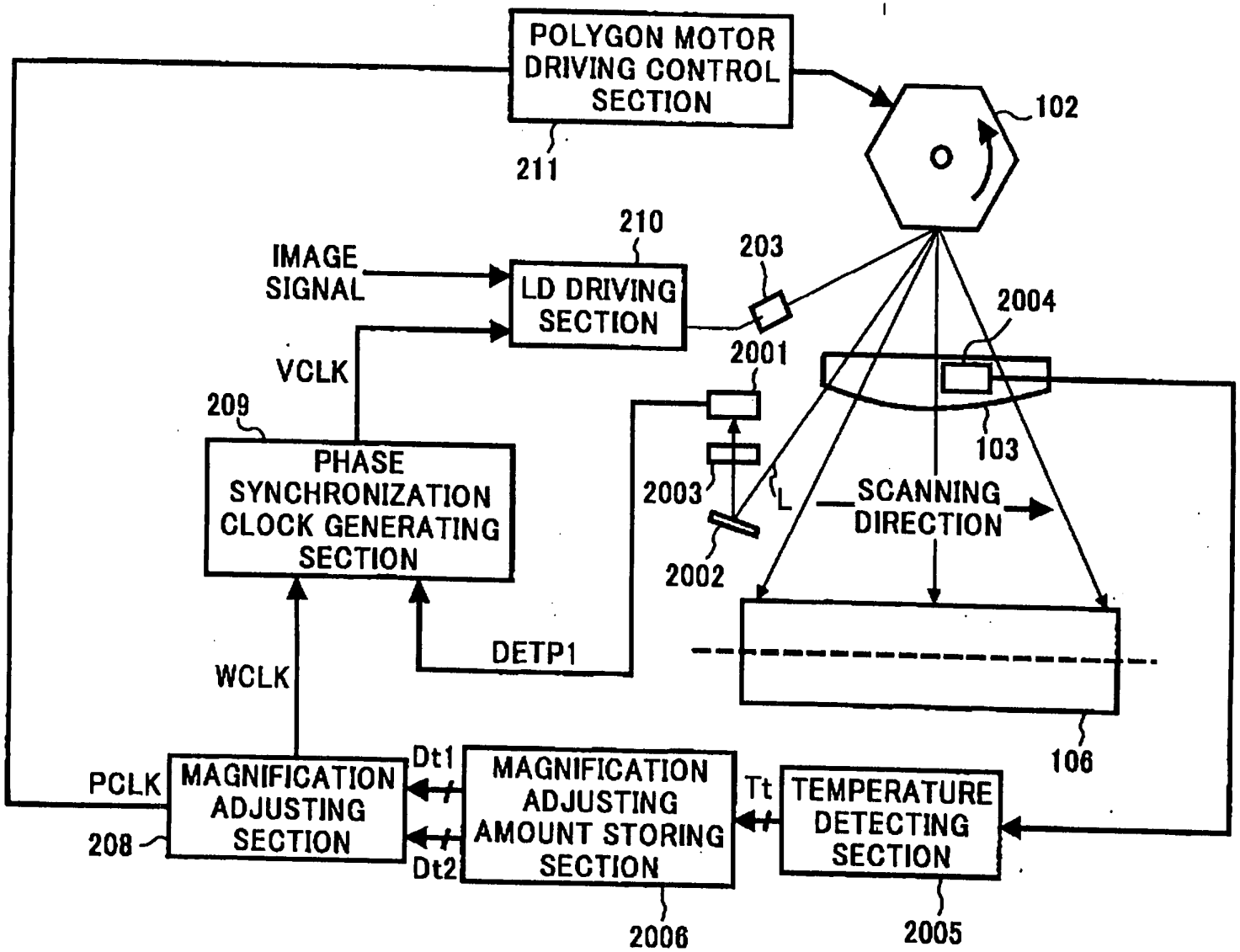

POLYGON MOTOR DRIVING CONTROL SECTION
211
102
210
IMAGE SIGNAL
LD DRIVING SECTION
203
2004
2001
VCLK
209
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION
103
2003
L
SCANNING DIRECTION
2002
DETP1
WCLK
106
PCLK
MAGNIFICATION ADJUSTING SECTION
208
Dt1
Dt2
MAGNIFICATION ADJUSTING AMOUNT STORING SECTION
2006
Tt
TEMPERATURE DETECTING SECTION
2005

FIG. 21

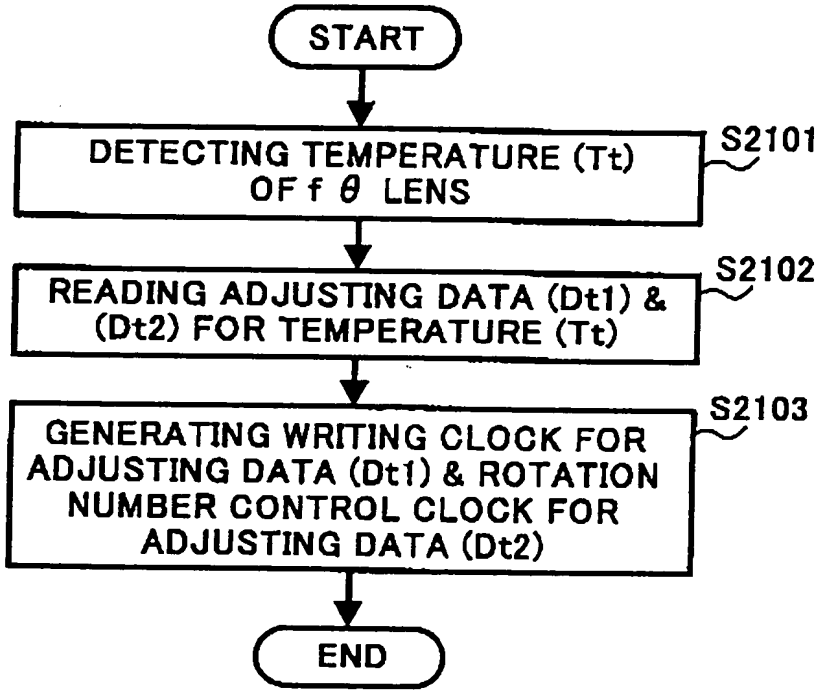

START
DETECTING TEMPERATURE (Tt) OF f θ LENS
S2101
READING ADJUSTING DATA (Dt1) & (Dt2) FOR TEMPERATURE (Tt)
S2102
GENERATING WRITING CLOCK FOR ADJUSTING DATA (Dt1) & ROTATION NUMBER CONTROL CLOCK FOR ADJUSTING DATA (Dt2)
S2103
END

FIG. 22

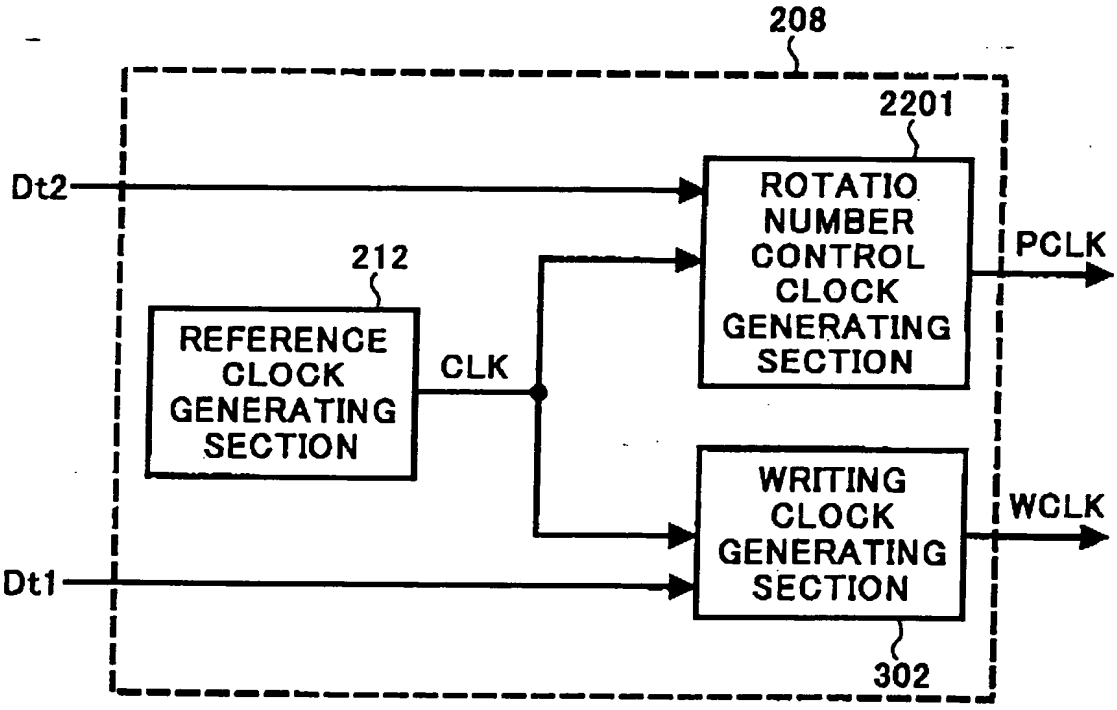

208
2201
Dt2
ROTATIO NUMBER CONTROL CLOCK GENERATING SECTION
PCLK
212
REFERENCE CLOCK GENERATING SECTION
CLK
WRITING CLOCK GENERATING SECTION
WCLK
Dt1
302

FIG. 23

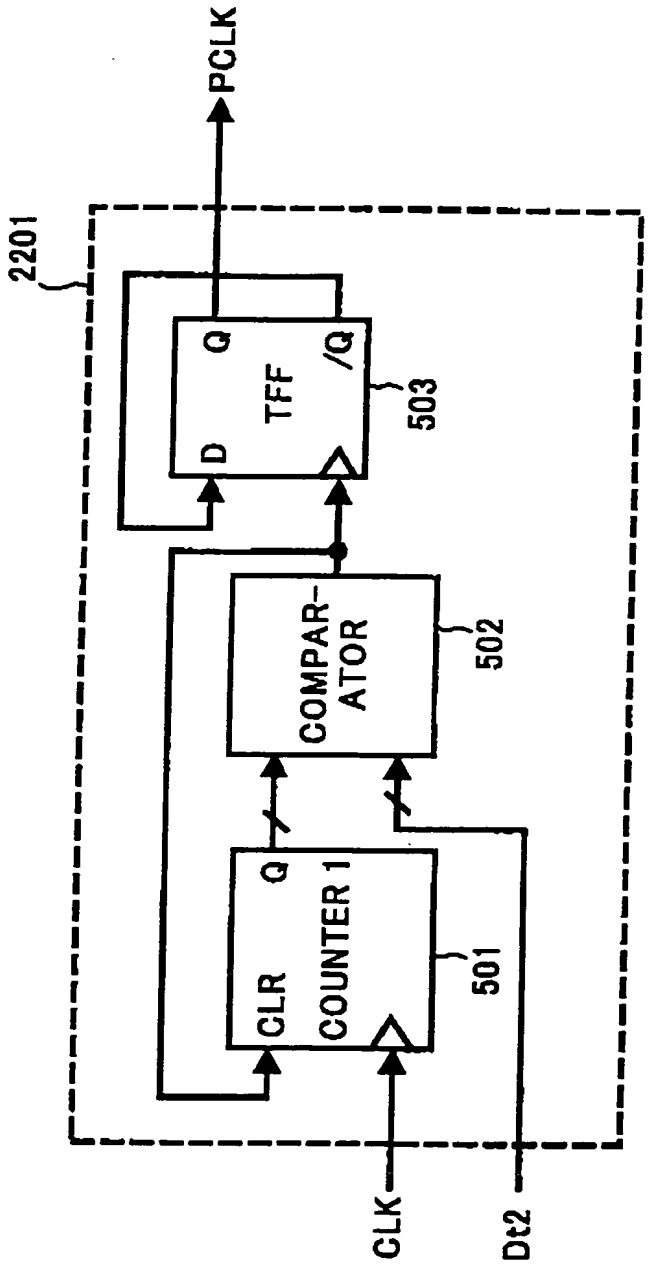

PCLK
2201
Q
/Q
TFF
D
503
COMPAR-
ATOR
502
Q
CLR
COUNTER 1
501
CLK
Dt2

FIG. 24

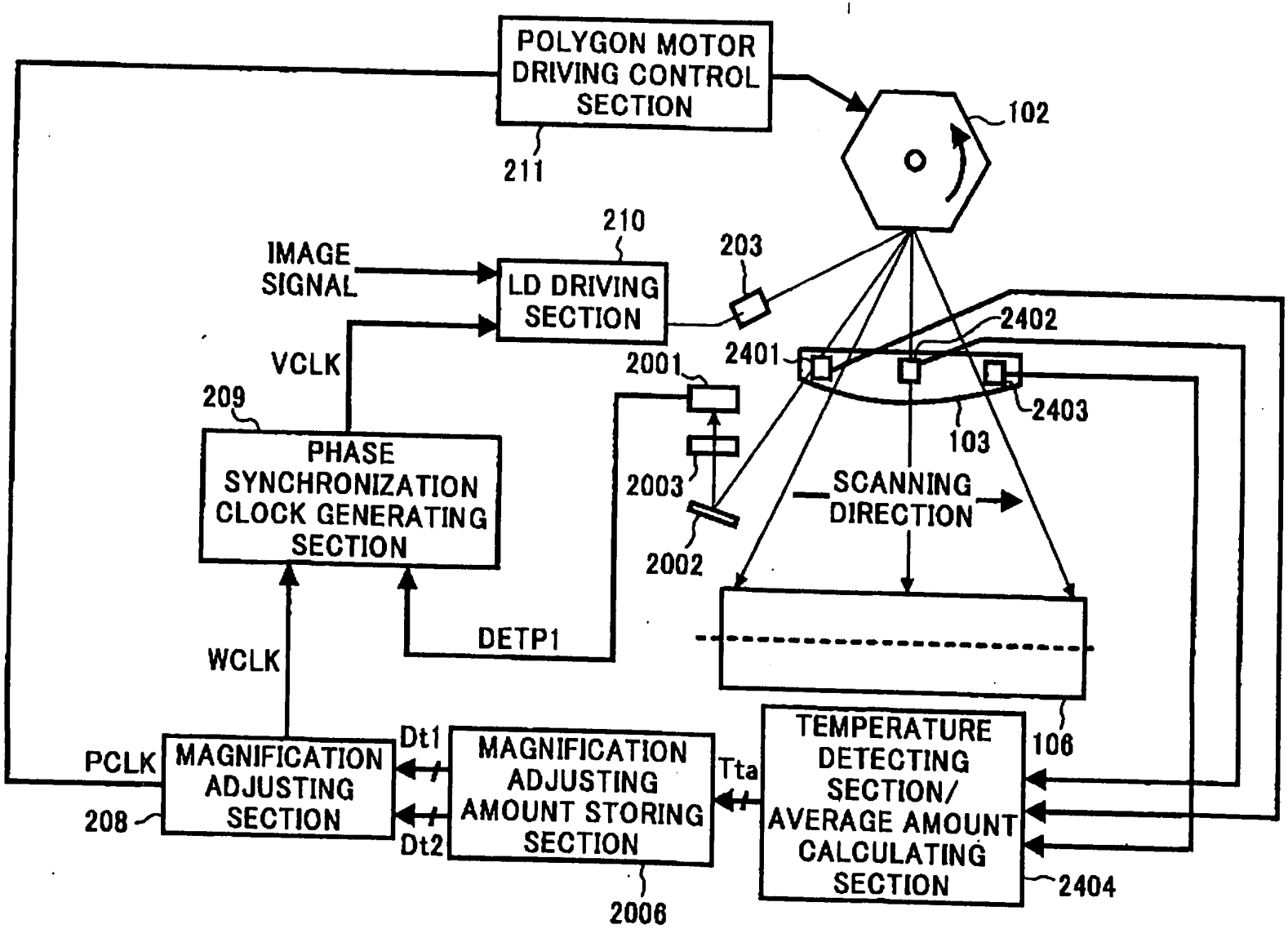

POLYGON MOTOR DRIVING CONTROL SECTION
211
102
210
IMAGE SIGNAL
LD DRIVING SECTION
203
2402
2401
VCLK
2001
209
2403
103
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION
2003
SCANNING DIRECTION
2002
DETP1
WCLK
PCLK
MAGNIFICATION ADJUSTING SECTION
208
Dt1
Dt2
MAGNIFICATION ADJUSTING AMOUNT STORING SECTION
2006
Tta
TEMPERATURE DETECTING SECTION/ AVERAGE AMOUNT CALCULATING SECTION
2404
106

FIG. 25

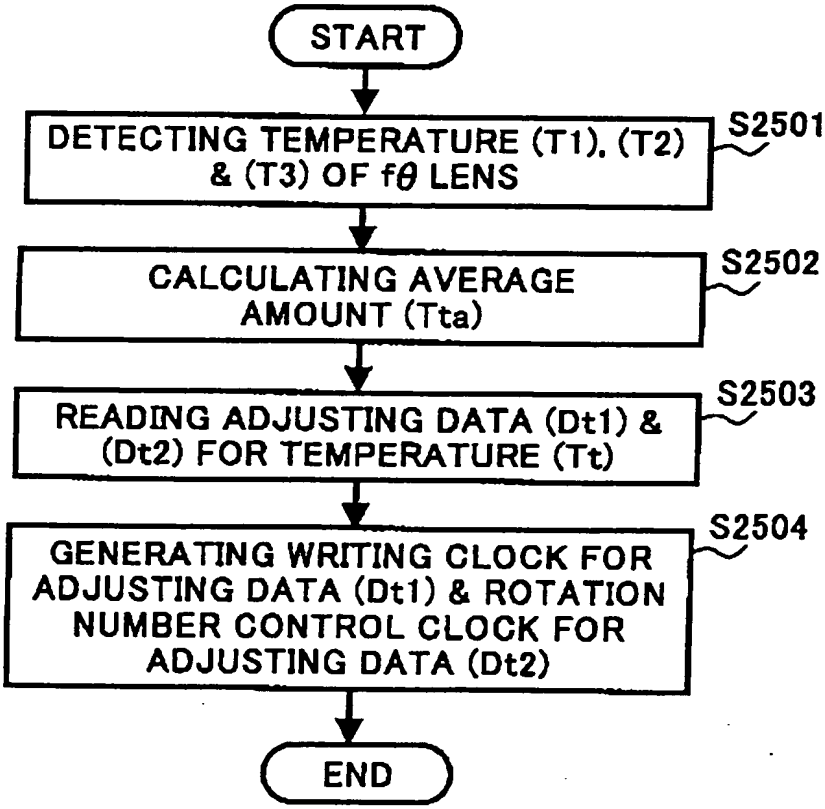

START
DETECTING TEMPERATURE (T1), (T2) & (T3) OF fθ LENS
S2501
CALCULATING AVERAGE AMOUNT (Tta)
S2502
READING ADJUSTING DATA (Dt1) & (Dt2) FOR TEMPERATURE (Tt)
S2503
GENERATING WRITING CLOCK FOR ADJUSTING DATA (Dt1) & ROTATION NUMBER CONTROL CLOCK FOR ADJUSTING DATA (Dt2)
S2504
END

FIG. 26

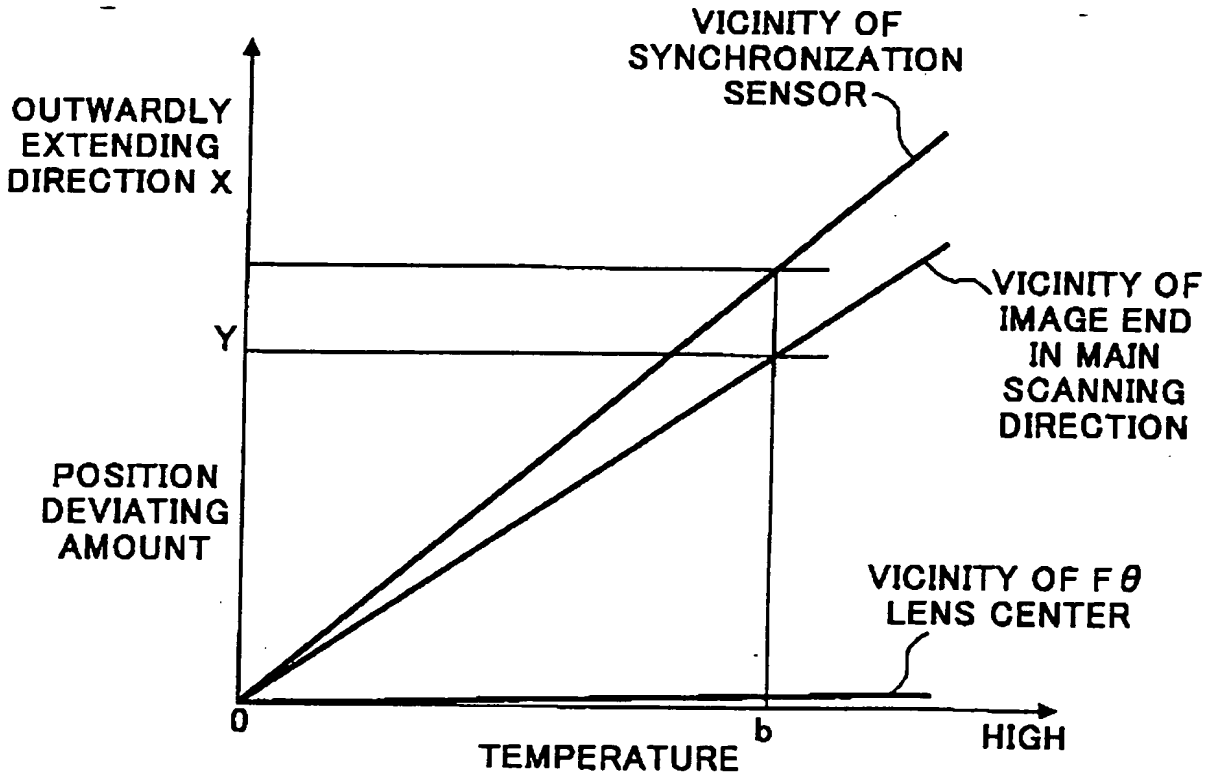

VICINITY OF SYNCHRONIZATION SENSOR
OUTWARDLY EXTENDING DIRECTION X
VICINITY OF IMAGE END IN MAIN SCANNING DIRECTION
Y
POSITION DEVIATING AMOUNT
VICINITY OF Fθ LENS CENTER
0
b
TEMPERATURE
HIGH

FIG. 27

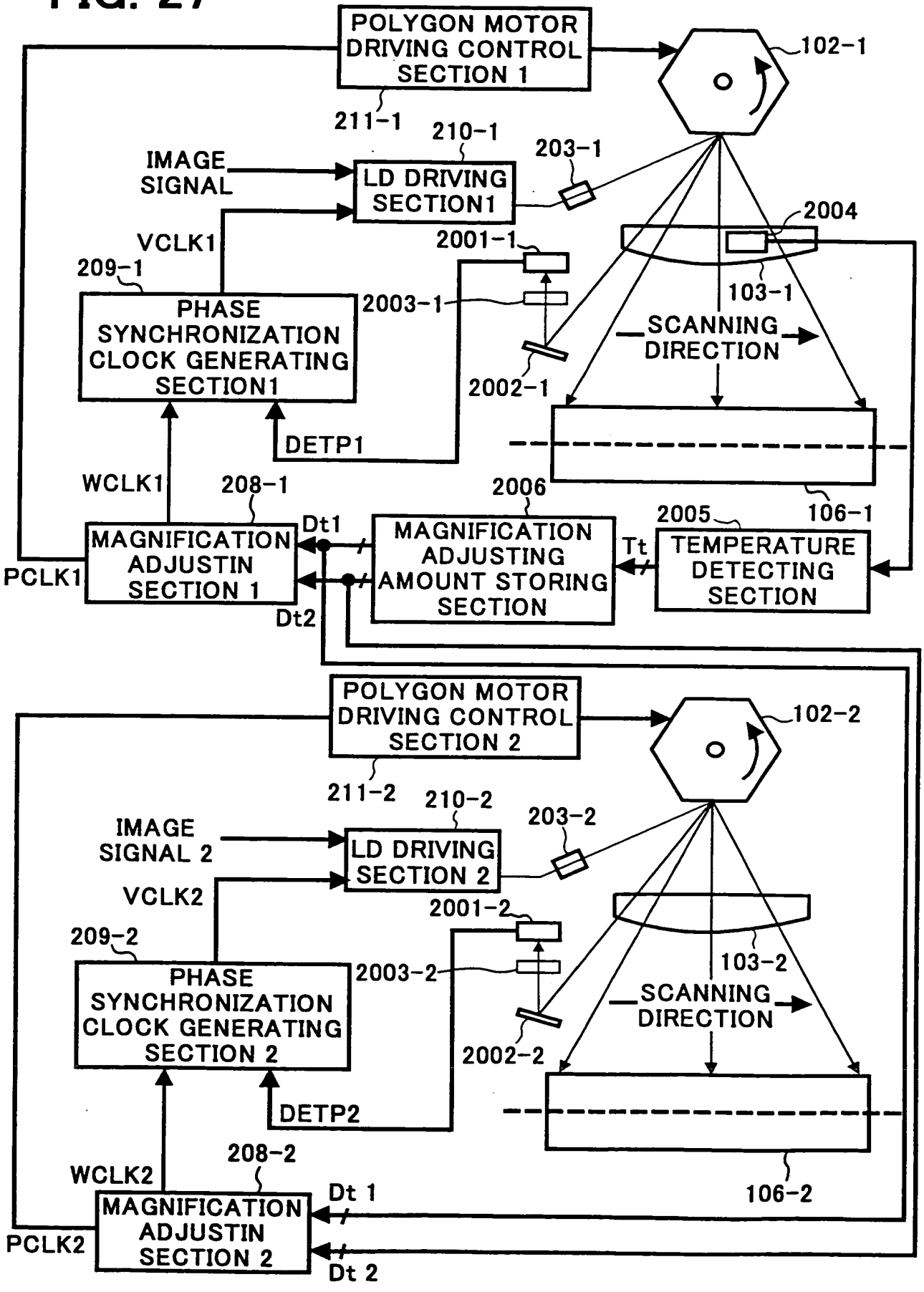

POLYGON MOTOR DRIVING CONTROL SECTION 1
211-1
102-1
210-1
IMAGE SIGNAL
LD DRIVING SECTION1
203-1
2004
VCLK1
2001-1
209-1
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION1
2003-1
103-1
SCANNING DIRECTION
2002-1
DETP1
WCLK1
208-1
2006
106-1
2005
Dt1
MAGNIFICATION ADJUSTIN SECTION 1
MAGNIFICATION ADJUSTING AMOUNT STORING SECTION
Tt
TEMPERATURE DETECTING SECTION
PCLK1
Dt2
POLYGON MOTOR DRIVING CONTROL SECTION 2
211-2
102-2
210-2
IMAGE SIGNAL 2
LD DRIVING SECTION 2
203-2
VCLK2
2001-2
209-2
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION 2
2003-2
103-2
SCANNING DIRECTION
2002-2
DETP2
WCLK2
208-2
Dt 1
106-2
MAGNIFICATION ADJUSTIN SECTION 2
PCLK2
Dt 2

FIG. 28

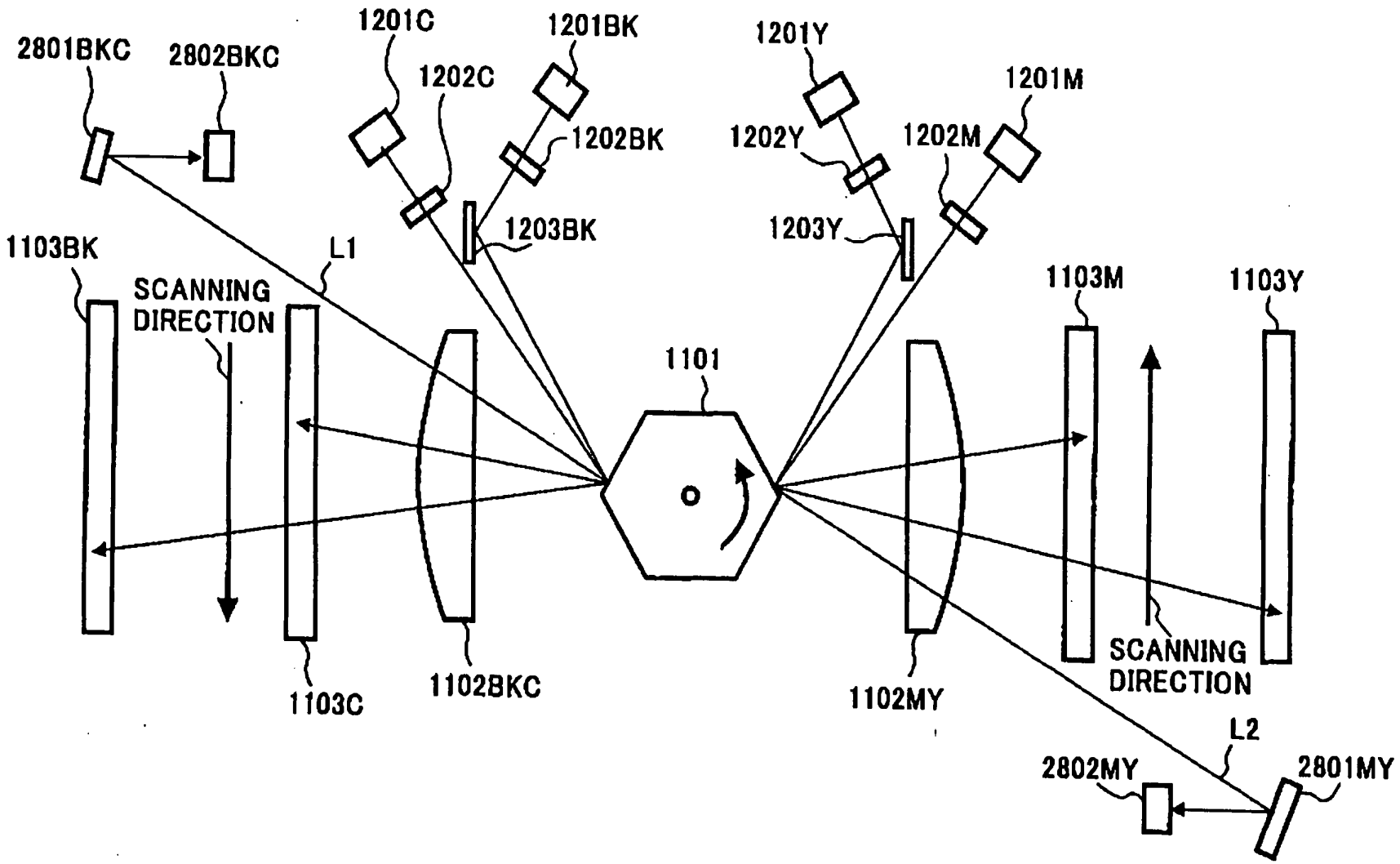

2801BKC
2802BKC
1201C
1202C
1201BK
1202BK
1203BK
1201Y
1202Y
1203Y
1201M
1202M
1103BK
L1
SCANNING DIRECTION
1101
1103M
1103Y
1103C
1102BKC
1102MY
SCANNING DIRECTION
L2
2802MY
2801MY

FIG. 29

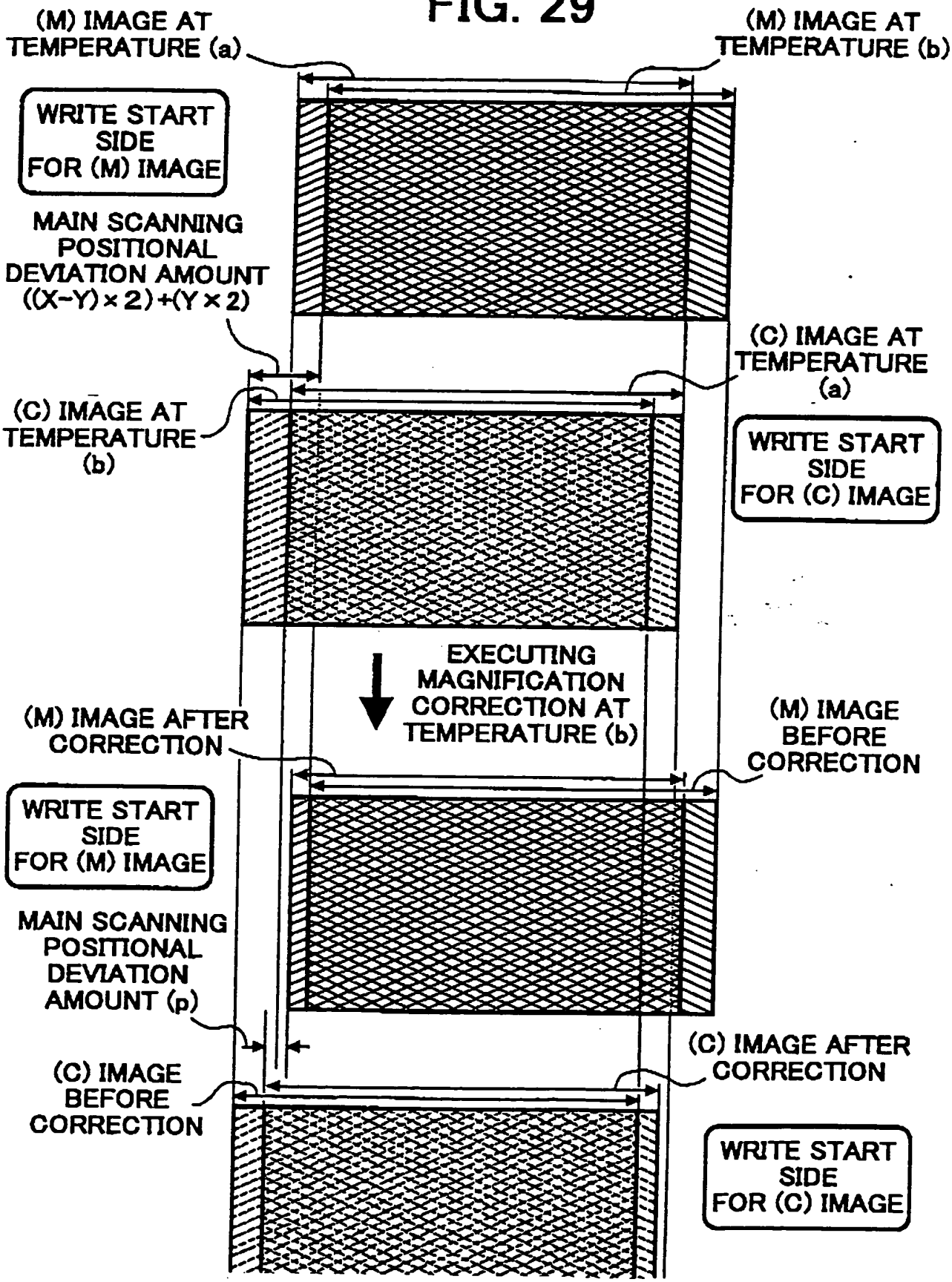

(M) IMAGE AT TEMPERATURE (a)
(M) IMAGE AT TEMPERATURE (b)
WRITE START SIDE FOR (M) IMAGE
MAIN SCANNING POSITIONAL DEVIATION AMOUNT ((X-Y)×2)+(Y×2)
(C) IMAGE AT TEMPERATURE (a)
(C) IMAGE AT TEMPERATURE (b)
WRITE START SIDE FOR (C) IMAGE
EXECUTING MAGNIFICATION CORRECTION AT TEMPERATURE (b)
(M) IMAGE AFTER CORRECTION
(M) IMAGE BEFORE CORRECTION
WRITE START SIDE FOR (M) IMAGE
MAIN SCANNING POSITIONAL DEVIATION AMOUNT (p)
(C) IMAGE AFTER CORRECTION
(C) IMAGE BEFORE CORRECTION
WRITE START SIDE FOR (C) IMAGE

FIG. 30

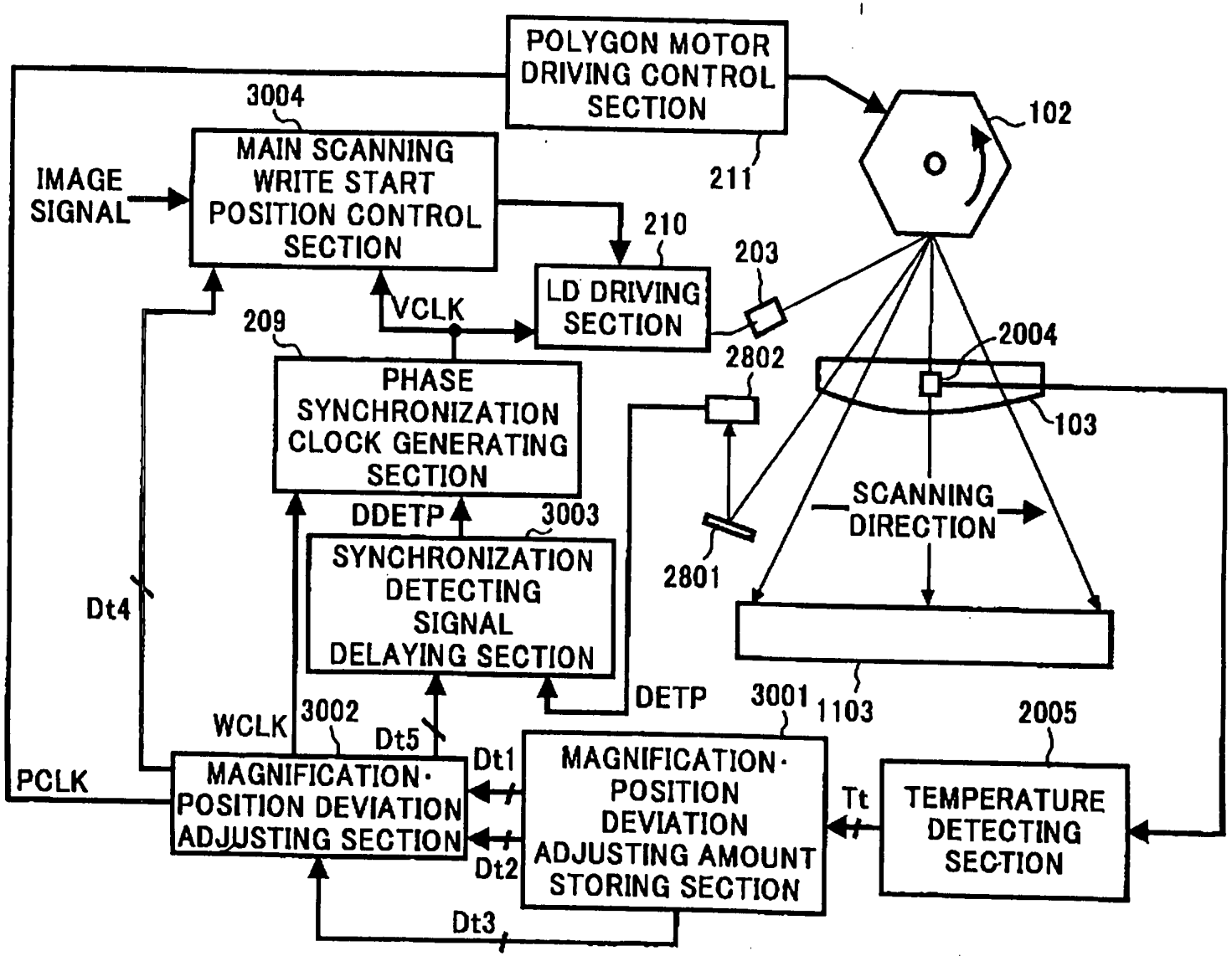

POLYGON MOTOR DRIVING CONTROL SECTION
211
102
3004
MAIN SCANNING WRITE START POSITION CONTROL SECTION
IMAGE SIGNAL
210
203
LD DRIVING SECTION
VCLK
209
2004
2802
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION
103
SCANNING DIRECTION
DDETP
3003
SYNCHRONIZATION DETECTING SIGNAL DELAYING SECTION
2801
Dt4
DETP
3001
1103
2005
WCLK
3002
Dt5
Dt1
PCLK
MAGNIFICATION· POSITION DEVIATION ADJUSTING SECTION
MAGNIFICATION· POSITION DEVIATION ADJUSTING AMOUNT STORING SECTION
Tt
TEMPERATURE DETECTING SECTION
Dt2
Dt3

FIG. 31

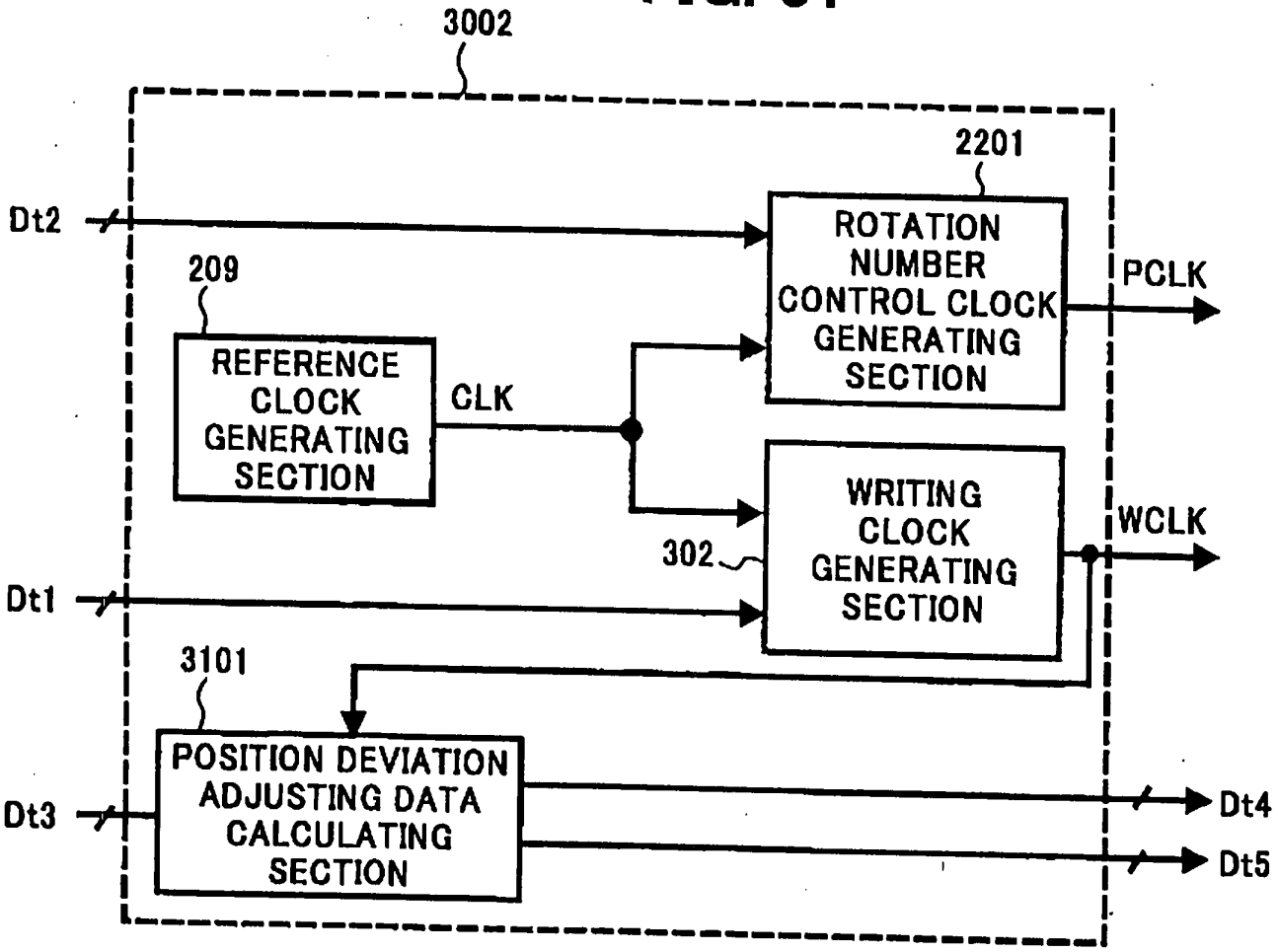

3002
2201
Dt2
ROTATION NUMBER CONTROL CLOCK GENERATING SECTION
PCLK
209
REFERENCE CLOCK GENERATING SECTION
CLK
WRITING CLOCK GENERATING SECTION
WCLK
302
Dt1
3101
POSITION DEVIATION ADJUSTING DATA CALCULATING SECTION
Dt3
Dt4
Dt5

FIG. 32

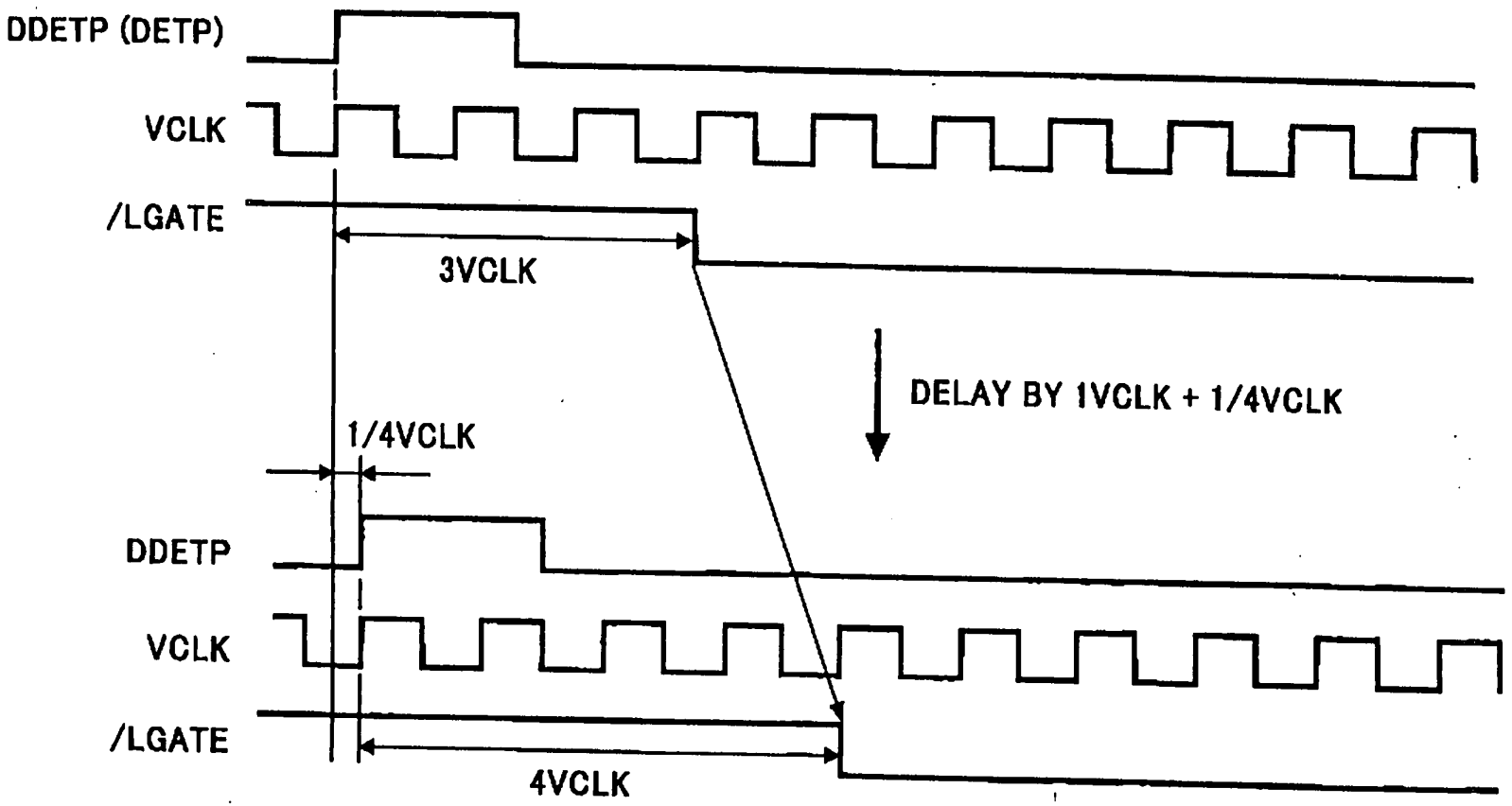

DDETP (DETP)
VCLK
/LGATE
3VCLK
DELAY BY 1VCLK + 1/4VCLK
1/4VCLK
DDETP
VCLK
/LGATE
4VCLK

FIG. 33

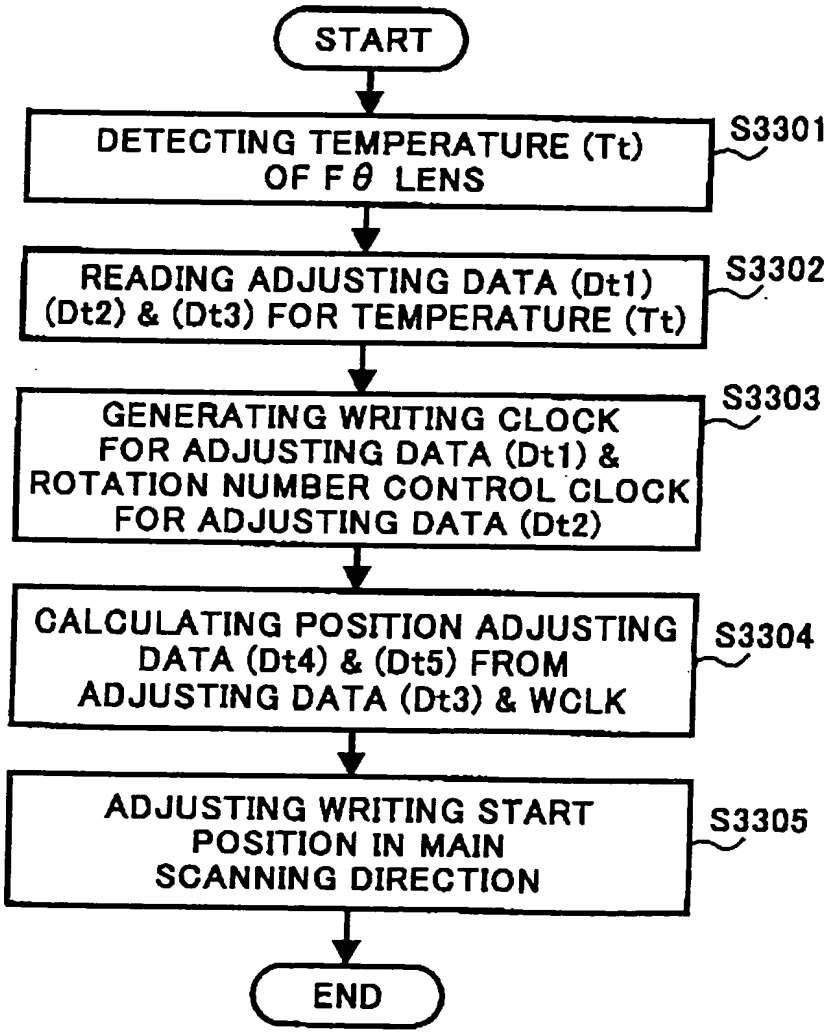

START
DETECTING TEMPERATURE (Tt) OF Fθ LENS
S3301
READING ADJUSTING DATA (Dt1) (Dt2) & (Dt3) FOR TEMPERATURE (Tt)
S3302
GENERATING WRITING CLOCK FOR ADJUSTING DATA (Dt1) & ROTATION NUMBER CONTROL CLOCK FOR ADJUSTING DATA (Dt2)
S3303
CALCULATING POSITION ADJUSTING DATA (Dt4) & (Dt5) FROM ADJUSTING DATA (Dt3) & WCLK
S3304
ADJUSTING WRITING START POSITION IN MAIN SCANNING DIRECTION
S3305
END

FIG. 34

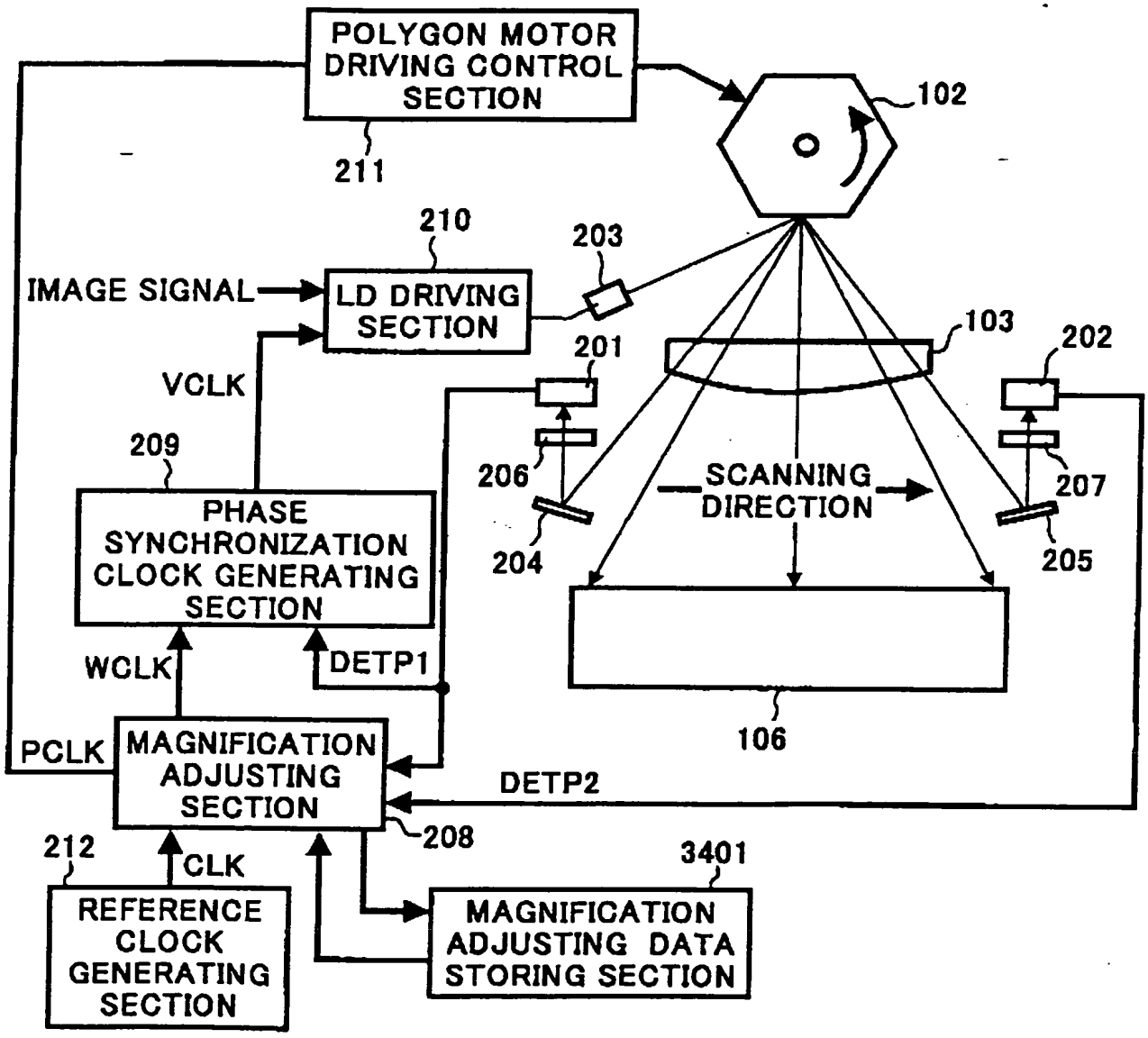

POLYGON MOTOR DRIVING CONTROL SECTION
211
102
210
203
IMAGE SIGNAL
LD DRIVING SECTION
103
202
201
VCLK
209
206
SCANNING DIRECTION
207
PHASE SYNCHRONIZATION CLOCK GENERATING SECTION
204
205
WCLK
DETP1
106
PCLK
MAGNIFICATION ADJUSTING SECTION
DETP2
208
212
CLK
3401
REFERENCE CLOCK GENERATING SECTION
MAGNIFICATION ADJUSTING DATA STORING SECTION

FIG. 35

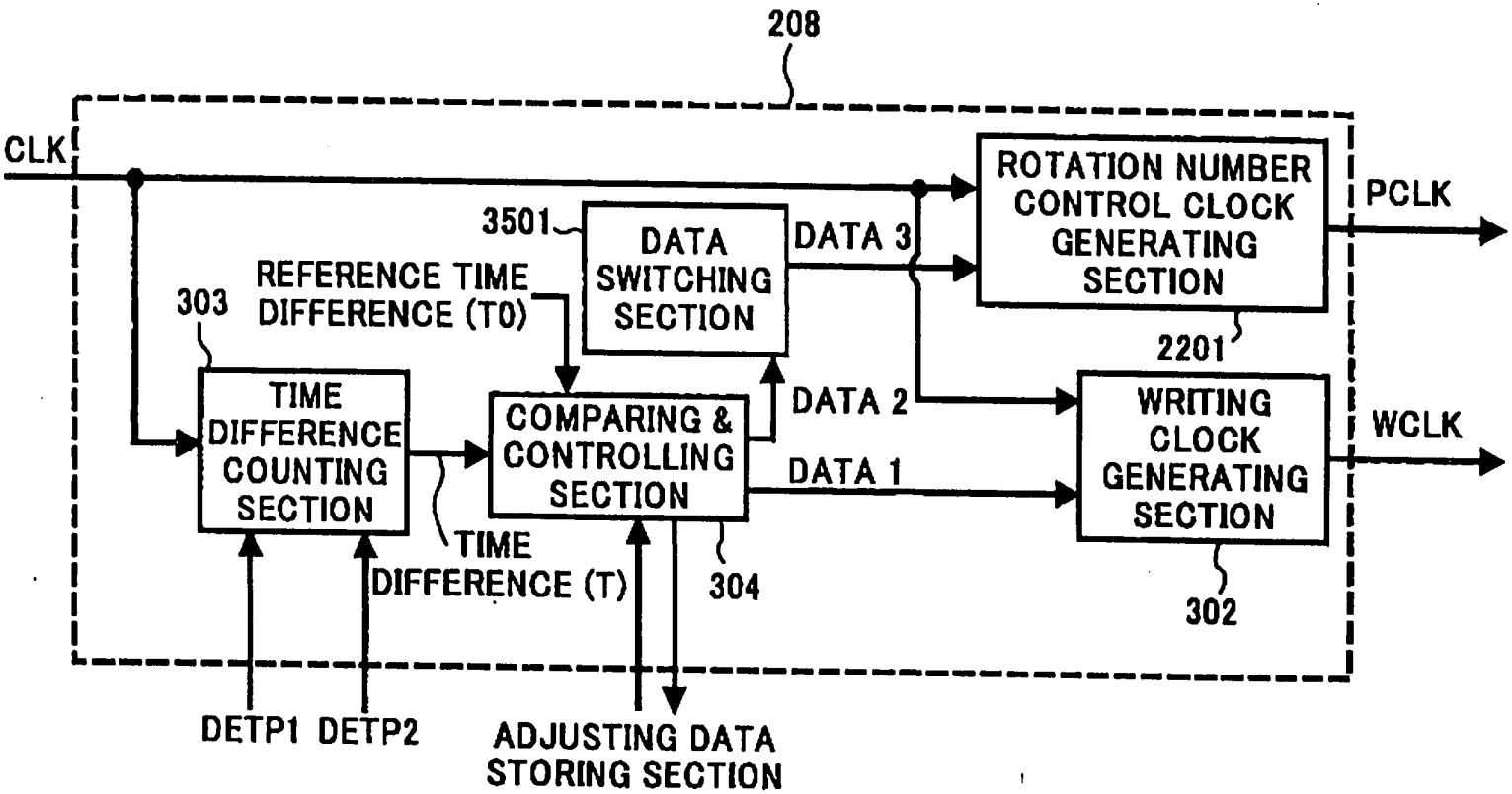

208
CLK
ROTATION NUMBER CONTROL CLOCK GENERATING SECTION
PCLK
3501
DATA SWITCHING SECTION
DATA 3
REFERENCE TIME DIFFERENCE (T0)
303
TIME DIFFERENCE COUNTING SECTION
COMPARING & CONTROLLING SECTION
DATA 2
DATA 1
2201
WRITING CLOCK GENERATING SECTION
WCLK
TIME DIFFERENCE (T)
304
302
DETP1
DETP2
ADJUSTING DATA STORING SECTION

FIG. 36

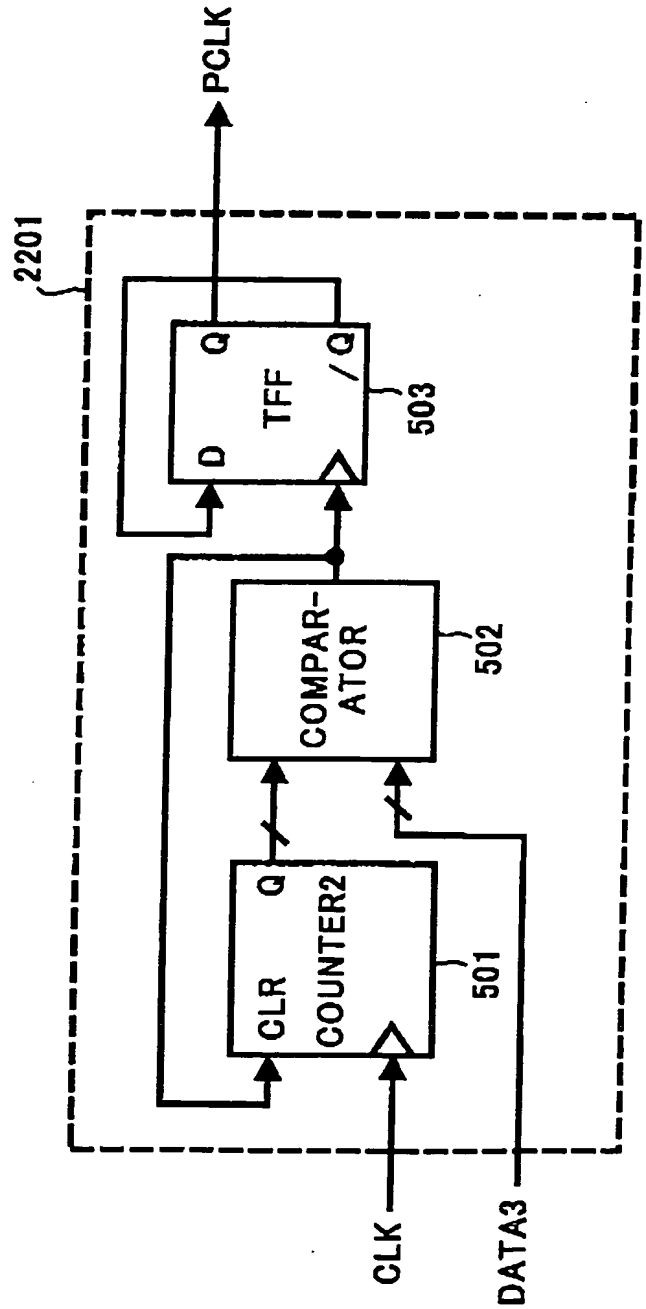

PCLK
2201
Q
/Q
TFF
D
503
COMPAR-
ATOR
502
Q
CLR
COUNTER2
501
CLK
DATA3

FIG.37

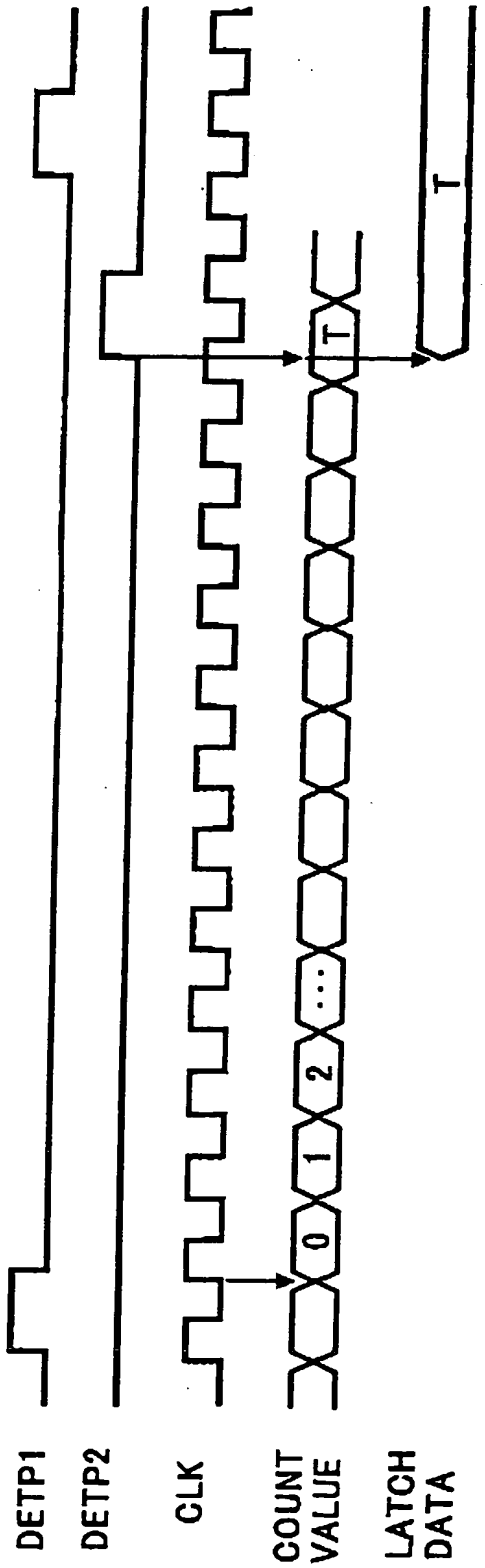


FIG. 38

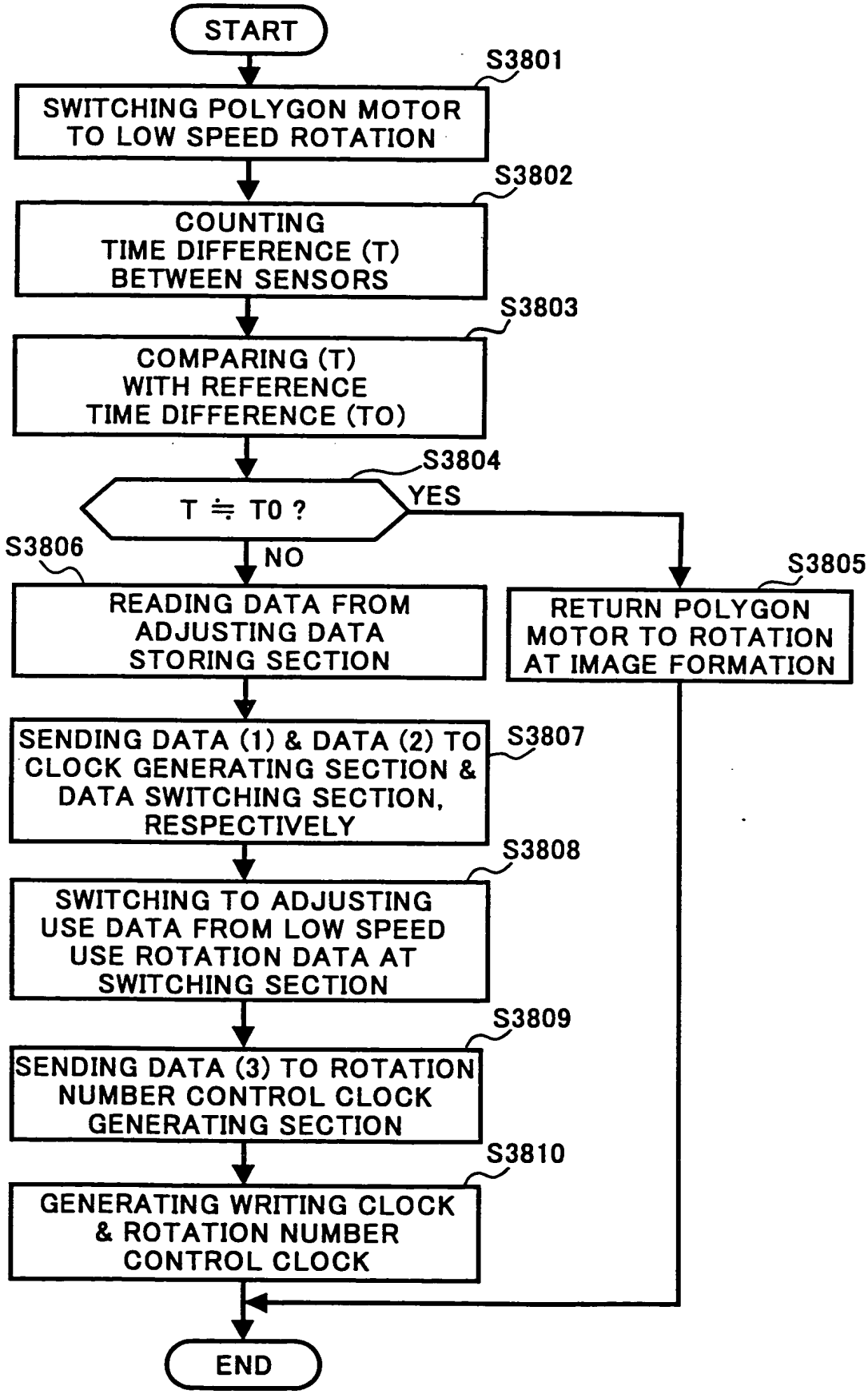

START
S3801
SWITCHING POLYGON MOTOR TO LOW SPEED ROTATION
S3802
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S3803
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (TO)
S3804
T ≒ T0 ?
YES
NO
S3806
READING DATA FROM ADJUSTING DATA STORING SECTION
S3805
RETURN POLYGON MOTOR TO ROTATION AT IMAGE FORMATION
SENDING DATA (1) & DATA (2) TO CLOCK GENERATING SECTION & DATA SWITCHING SECTION, RESPECTIVELY
S3807
SWITCHING TO ADJUSTING USE DATA FROM LOW SPEED USE ROTATION DATA AT SWITCHING SECTION
S3808
SENDING DATA (3) TO ROTATION NUMBER CONTROL CLOCK GENERATING SECTION
S3809
GENERATING WRITING CLOCK & ROTATION NUMBER CONTROL CLOCK
S3810
END

FIG. 39

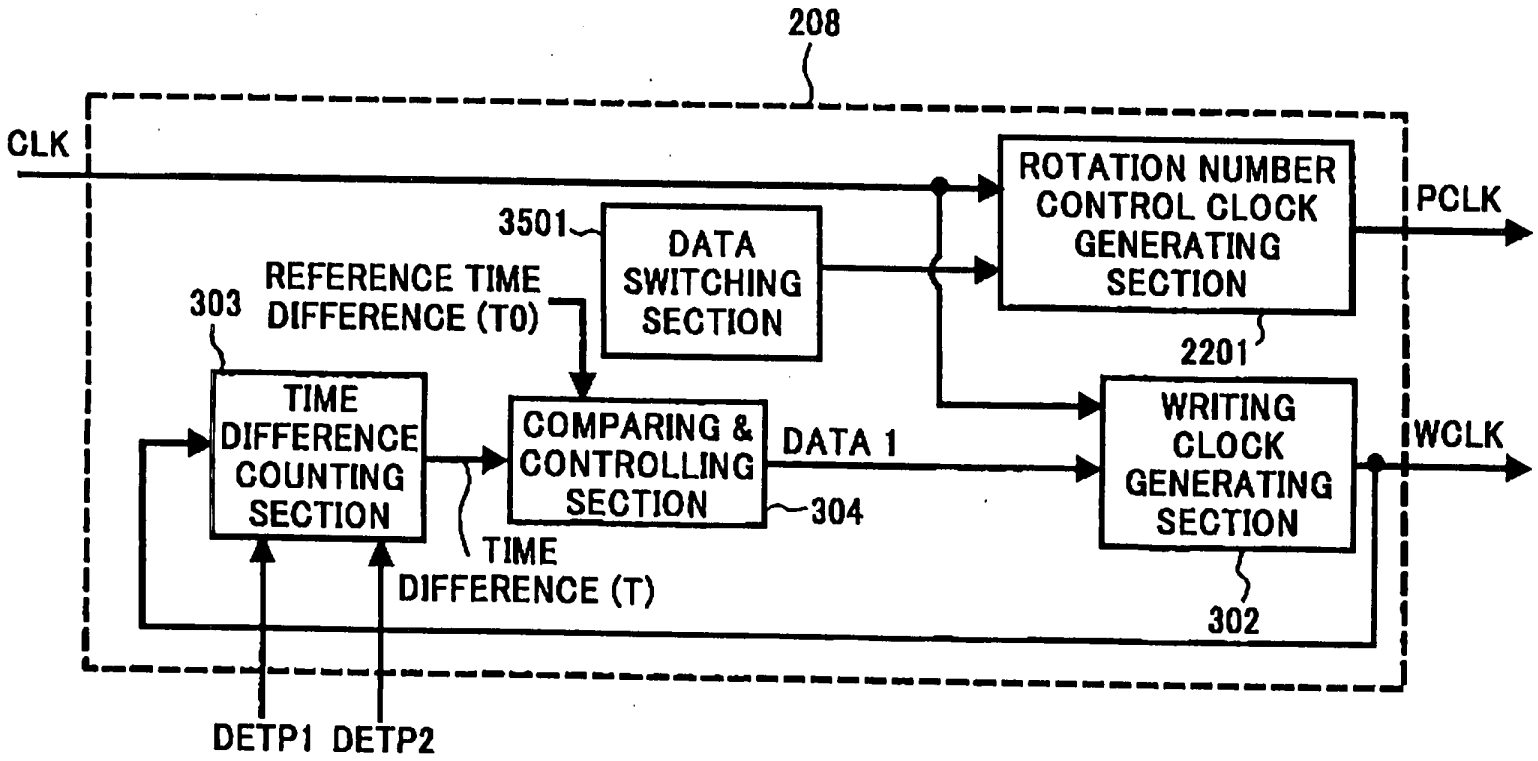

208
CLK
ROTATION NUMBER CONTROL CLOCK GENERATING SECTION
PCLK
3501
DATA SWITCHING SECTION
REFERENCE TIME DIFFERENCE (T0)
303
2201
TIME DIFFERENCE COUNTING SECTION
COMPARING & CONTROLLING SECTION
DATA 1
WRITING CLOCK GENERATING SECTION
WCLK
304
TIME DIFFERENCE (T)
302
DETP1
DETP2

FIG. 40

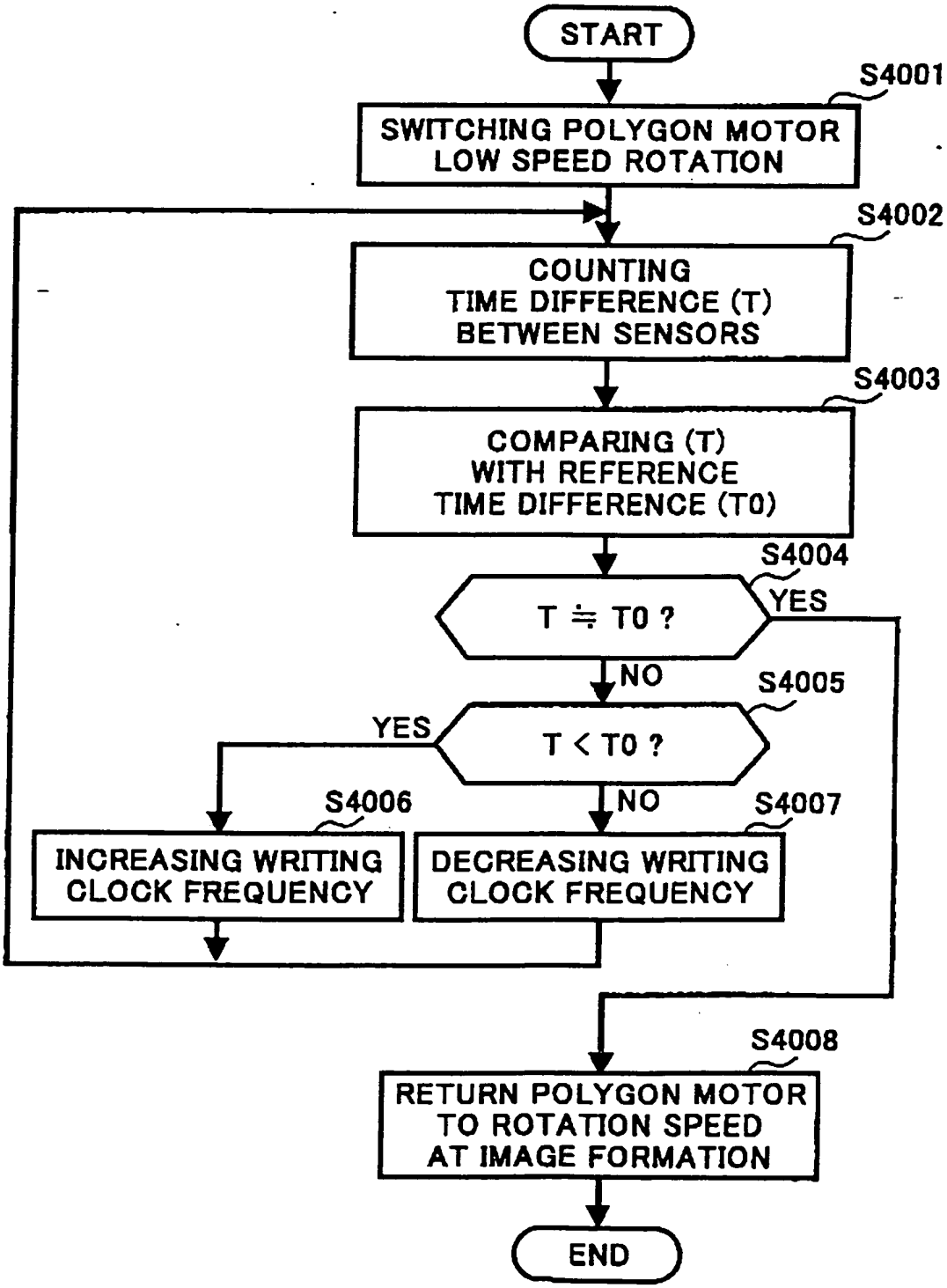

START
S4001
SWITCHING POLYGON MOTOR LOW SPEED ROTATION
S4002
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S4003
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T0)
S4004
T ≒ T0 ?
YES
NO
S4005
T < T0 ?
YES
NO
S4006
INCREASING WRITING CLOCK FREQUENCY
S4007
DECREASING WRITING CLOCK FREQUENCY
S4008
RETURN POLYGON MOTOR TO ROTATION SPEED AT IMAGE FORMATION
END

FIG. 41

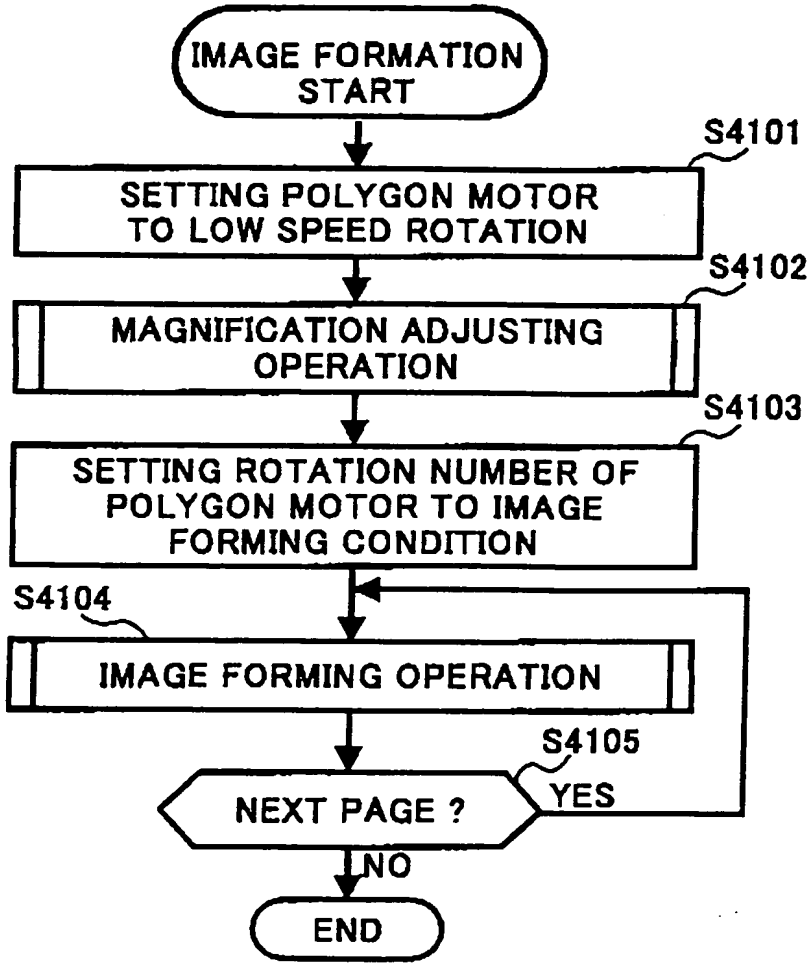


IMAGE FORMATION START
S4101
SETTING POLYGON MOTOR TO LOW SPEED ROTATION
S4102
MAGNIFICATION ADJUSTING OPERATION
S4103
SETTING ROTATION NUMBER OF POLYGON MOTOR TO IMAGE FORMING CONDITION
S4104
IMAGE FORMING OPERATION
S4105
NEXT PAGE ?
YES
NO
END

FIG. 42

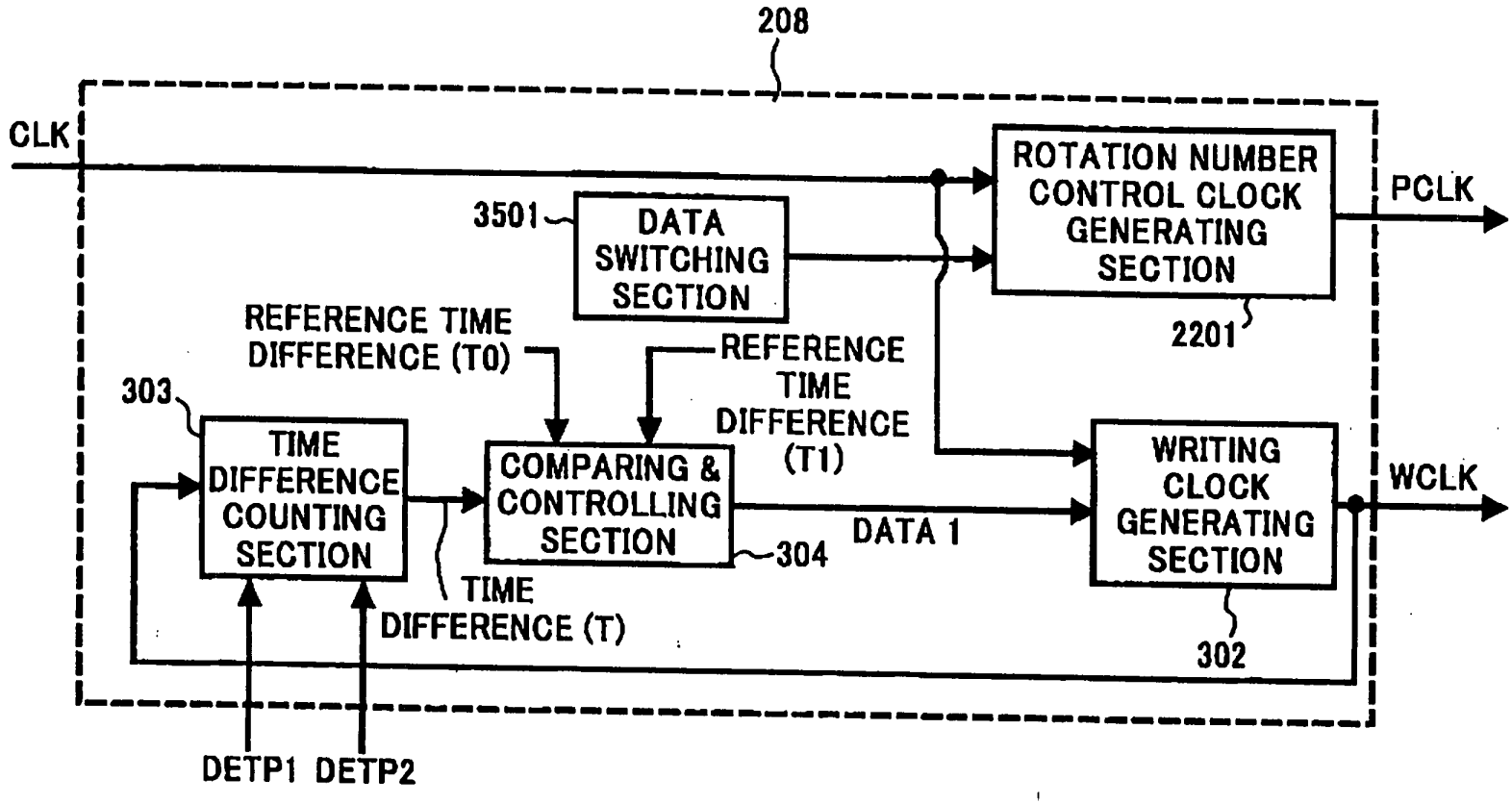
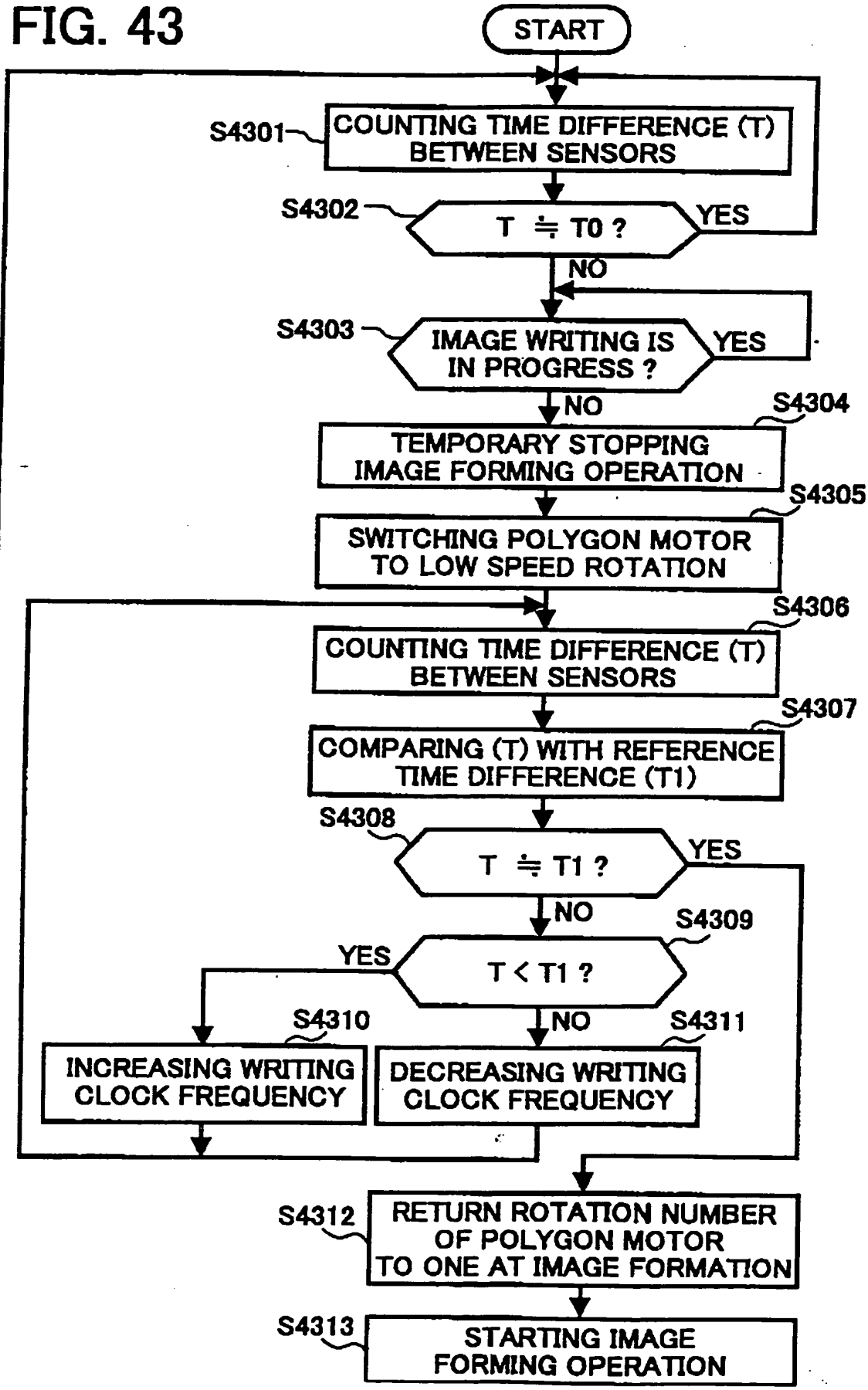

208
CLK
ROTATION NUMBER CONTROL CLOCK GENERATING SECTION
PCLK
3501
DATA SWITCHING SECTION
2201
REFERENCE TIME DIFFERENCE (T0)
REFERENCE TIME DIFFERENCE (T1)
303
TIME DIFFERENCE COUNTING SECTION
COMPARING & CONTROLLING SECTION
304
DATA 1
WRITING CLOCK GENERATING SECTION
WCLK
TIME DIFFERENCE (T)
302
DETP1
DETP2

FIG. 43


START
S4301
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S4302
T ≒ T0 ?
YES
NO
S4303
IMAGE WRITING IS IN PROGRESS ?
YES
NO
S4304
TEMPORARY STOPPING IMAGE FORMING OPERATION
S4305
SWITCHING POLYGON MOTOR TO LOW SPEED ROTATION
S4306
COUNTING TIME DIFFERENCE (T) BETWEEN SENSORS
S4307
COMPARING (T) WITH REFERENCE TIME DIFFERENCE (T1)
S4308
T ≒ T1 ?
YES
NO
S4309
YES
T < T1 ?
NO
S4310
INCREASING WRITING CLOCK FREQUENCY
S4311
DECREASING WRITING CLOCK FREQUENCY
S4312
RETURN ROTATION NUMBER OF POLYGON MOTOR TO ONE AT IMAGE FORMATION
S4313
STARTING IMAGE FORMING OPERATION